TECHNOLOGY DEPT
First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

Vol. 14. No. 1848 — Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879 — NEW YORK, WEDNESDAY, NOVEMBER 2, 1932 — 5 Cents. $12 Per Year.

Chrysler Announces New Plymouth Six at Base Price Of $495 in Great Nationwide Radio Conference

October Car-Truck Output Estimated at 44,000 Units On Basis of A.D.N. Survey

Dealer Stocks Are Reduced to New Low Levels During The Month; Belated Sales Spurt Wanes

Detroit, Nov. 1.—With numerous cross currents that obscure the situation, it seems probable that the automotive industry in the month of October produced about 44,000 vehicle units of all classes.

October started fairly briskly in the matter of turning out vehicles. A belated demand that became apparent late in August continued in September and into the early part of October, but disappeared during the latter half of the month. In some cases companies which had intended to stop production on their 1932 models were forced to continue after the predetermined "cease firing" date had been set.

As has been the case every month this year, the industry geared its production strictly to definite demand; in fact, somewhat below.

When the sales returns for the month come in, it will be found that another considerable reduction in dealer stocks has been made.

If our estimate of 44,000 as the October production proves to be accurate, it is the lowest monthly total in the modern history of the industry. The previous low was established in November, 1931, when the output reached 70,114. In October, 1931, the production total was 81,582. In September this year the output was 86,483.

CANADIAN TRUCK SALES IN SEPT. TOP AUG. BY 27 UNITS

Toronto, Canada, Nov. 1.—The industry in Canada is encouraged by the report that commercial car sales for the month of September, in the five eastern Canadian provinces, topped those of the previous month, exceeding the August registration figures by 27 units. Passenger car registrations also made an exceptionally good showing in the month of September, and while not exceeding the August returns, do not show the customary seasonal drop anticipated at this season of the year.

In Ontario, commercial car sales, based on registrations made available by Might Directories, Ltd., of this city, exceeded September sales by 69 units. Passenger car sales came within 62 units of equaling September's figure, which was considered satisfactory in view of prevailing conditions. A slight gain in September commercial car sales was reported from Nova Scotia, while Prince Edward Island territory broke even with August. For the nine-month period ended September, passenger car sales are running slightly less than 20,000 units behind 1931, with commercial cars more than 5,000 units short.

Gains in September sales over August are reported by several

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PASSENGER CAR REGISTRATIONS

Complete new passenger car registrations for September, 1932, by makes and states, together with nine months' totals by makes and months for 1932, appear on pages 8, 9, 10 and 11 of this issue.

DETROIT HEARS NEW DODGE WILL EMBODY NEW TRANSMISSION

Detroit, Nov. 1.—Gasoline row has a persistent story—to which credence seems to be given in usually well-posted circles. It is to the effect that the much-rumored, not yet unveiled, new Dodge will be a car operating either without the speed changing transmission which up to now has been regarded as an

(Continued on Page 6)

ELECTION DAY

Owing to the fact that Tuesday, November 8, is Election Day, a legal holiday, Automotive Daily News will not be published on that day.

EMPLOYMENT GAINS IN AUTOMOTIVE PLANTS DURING SEPTEMBER

Washington, Nov. 1.—The upward push in business that is manifesting itself in industry throughout the country is appearing in a certain upward trend in the automotive industry, according to the results of the September survey of the United States Employment Service of the Department of Labor.

Although part-time schedules still prevail in automobile and rubber tire factories, there is said to have been a general tightening up and increase in activity all along the line, with a fair number of establishments operating full time and a few working overtime.

In Michigan there was a decided increase of activity apparent in the automobile body and automobile accessory plants of the Detroit industrial district. Several body plants, pattern shops and a tool and die concern in this district reported overtime work. Curtailed forces prevailed in Flint, Jackson and Lansing automotive plants, with the die department of one Flint automobile factory working overtime. A few Jackson automotive plants were closed for inventory taking.

Though reduced employment generally obtained in the automotive industry in Indiana, an Anderson

(Continued on Page 7)

75,000 DEALERS, SALESMEN JOIN PUBLIC IN "AUDIENCE"

New York, Nov. 1.—In the first radio sales conference of such magnitude in the history of American business, the Chrysler Corporation today adopted a method and means of acquainting its 75,000 dealers and salesmen, as well as the general public, with the details of the new Plymouth six, to sell at an average of $60 below the current prices, that should make the witches of Halloween blush with shame. Flitting over the moon on a broom is mere horse play compared with the necromancy of this broadcast.

With 75,000 men gathered in twenty-five groups at strategic points throughout the nation, radio linked them into one meeting with the same effect of all being under the same roof hearing the same things and seeing the same things at the same time. The broadcast as a whole was dramatized to the nth degree. Music, voice and sound effects were used to picture the birth and development of a new automobile.

Entertainment and educational sketches were interspersed with the business of the day. The climax of the first hour of the broadcast was reached when Harry G. Moock, Plymouth sales manager, introduced to the dealers and salesmen assembled at the twenty-five key points the Plymouth Six in person. This dramatic moment called for exquisite timing and precision in broadcasting and was a surprise equaled only by the earlier announcement by Mr. Walter P. Chrysler of the new low prices at which the new Plymouth Six will sell.

Mr. Moock is talking, and with the cue phrase "Plymouth sets the pace," the lights in each of the meeting halls were dimmed, the curtain withdrawn from the stage and when the lights are brightened the New Plymouth is unveiled.

The first hour of the broadcast started promptly at 1 p. m., the lights in the various meeting halls were dimmed, and the broadcast got under way to the tune of martial music. Listeners were then figuratively transported to Detroit, where they were permitted to listen in on discussions of the board of directors of the Chrsyler Corporation. The idea of the new Plymouth Six is just aborning, and the dealers and public are permitted to sit in for the first time on a discussion of this sort.

From the ideas presented at this conference the actual car is started in the making. The audience is taken into the research laboratories, with its whirring of test engines,

(Continued on Page 4)

NEW PLYMOUTH SIX PRICES, COMPARED WITH OTHER MAKES

The following chart gives the body model prices on the new Plymouth six-cylinder line in comparison with similar models of Ford-4, Ford-8, Chevrolet and Essex Terraplane. This constitutes the lowest price class, with bases below $500:

	Plymouth	Chevrolet	Ford-4	Ford-8	Essex Terra.
Stan. Coupe	495	493	440	490	470
Sport Coupe	545	535	485	535	510
Sedan	575	590	540	590	550
Cabriolet ..	595	595	560	610	..

Chrysler Presents the Plymouth Six

Fred M. Zeder, (above) chief engineer of the Chrysler Motor Corporation, tells the public what makes the wheels go around in the new Plymouth Six.

Walter P. Chrysler, chairman of the board of the Chrysler Motors Corporation, broadcasting plans and prices for the new Plymouth Six announced today.

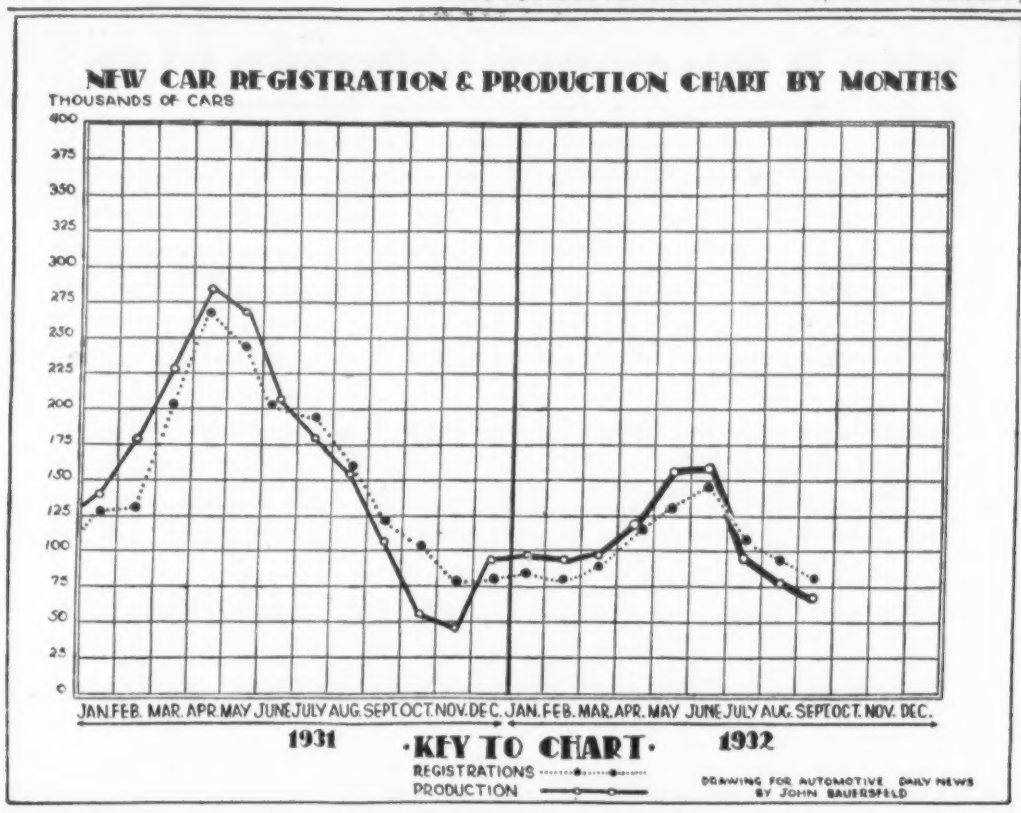
B. E. Hutchinson, chairman of the board of the Plymouth Corporation, tells the dealers that the time to go after business is now.

PIERCE-ARROW SHOWS SALES GAIN IN N. Y. FOR NINE MONTHS

New York, N. Y., Nov. 1.—According to J. D. Casey, sales manager of the New York branch of the Pierce-Arrow Motor Car Company, Pierce-Arrow is the only car in its class which has shown a gain in registrations in Manhattan for the first nine months of this year.

Mr. Casey states that Pierce-Arrow gained 20 per cent. in sales over the same period last year, all other cars in this price group showing losses. Even the month of October, according to Casey, shows a gain of 30 per cent. over last October in Pierce-Arrow deliveries.

Every indication points toward the entire year showing a gain over last year for sales in Manhattan.



MIDDLE ATLANTIC STATES SHOW MATERIAL REGISTRATION GAIN

Detroit, Nov. 1.—A breakdown by geographical zones of new motor car registrations in the nine months period, according to R. L. Polk & Co., showed that sales in the Middle Atlantic states only had shown a material increase. These states recorded 27.14 per cent. of the total for the United States, as compared with 24.46 per cent. in 1931. Fractional gains were reported for New England, the east north central and the west south central states.

Registrations by zones in this period, together with the zone percentages of the national total for each year follow:

		Percentage 1932	Percentage 1931
New England	82.166	8.71	8.63
Middle Atlantic	255.973	27.14	24.46
East North Central	212.958	22.58	22.34
West North Central	102.487	10.87	11.68
South Atlantic	95.652	10.14	10.84
East South Central	32.435	3.44	3.90
West South Central	64.158	6.80	6.40
Mountain	24.172	2.56	2.80
Pacific	73.162	7.76	8.95
	943.163	100.00	100.00

REPORTS BIG ORDERS

West Allis, Wis., Nov. 1.—Substantial orders, as well as increasing inquiries, have been announced by the Le Roi Company, manufacturer of gas engines, air compressors and generators. The company has just received an order from the United States Department of Agriculture Forestry Service for thirty-two tractor mounting air compressors for trail building in national forests.

TO EXPAND PLANT

Clarion, Pa., Nov. 1.—The Owens Illinois Glass Company has awarded contracts for construction of a $75,000 addition to its local plant. Construction work on the project will start immediately and will provide enlargement of facilities of the packing and shipping department here.

MARMON TO SHOW AT NOVEMBER SALONS

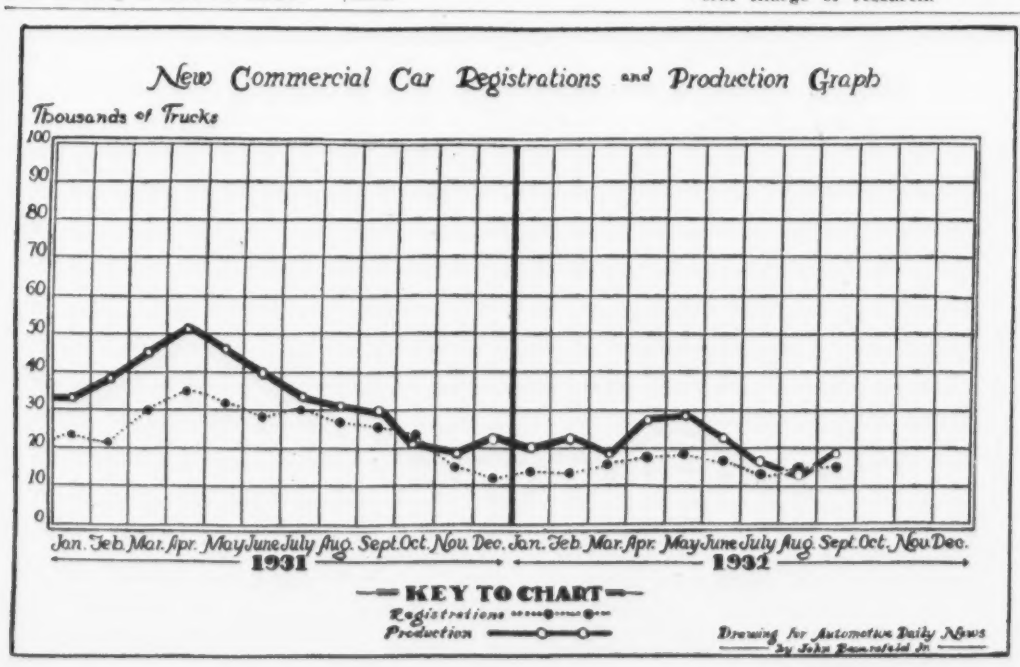
Indianapolis, Ind., Nov. 1.—The program of special salon displays of the Marmon 1933 sixteens is being continued throughout November, according to George C. Tenney, Marmon general sales director, thus serving to introduce the new Marmon sixteen in additional metropolitan points.

The Marmon general sales director also made a second announcement that reveals another bright spot in the automobile industry as far as sales of higher-priced cars are concerned. He reported that in the period from August 15 to October 31 the Marmon factory sold a far greater number of Marmon sixteens in point of actual cash received than in any previous similar period this year.

WHITNEY RESIGNS FROM G. E. "HOUSE OF MAGIC"

Schenectady, N. Y., Nov. 1.—Dr. Willis Rodney Whitney, organizer and for thirty-two years director of the famous research laboratory of the General Electric Company, retired from that position owing to poor health today.

He was succeeded, by appointment of Gerard Swope, president of the company, by Dr. William David Coolidge, senior associate director of the laboratory. Dr. Whitney continues as vice-president in general charge of research.



SPARKS from DETROIT

Ideal Salesmen's Creed

New Plymouth Six

Low Upkeep Cost

Quick-Trigger Service

Chris Sinsabaugh—Detroit Editor

JOHN C. M'GUIRE, sales manager of the Chrysler Corporation of Canada, contributes what I regard is the ideal salesman's creed, material possibly for A. D. N.'s retail salesmen's page, but which I unblushingly swipe as hot stuff for the column. I don't have to attempt to analyze it—it speaks for itself and preaches a sermon to the men on the firing line, whose motto should be, "Dogged does it," a British importation in the way of slogans.

* * *

This credo reads: "If at any time it is hard to make sales and it seems impossible to find as many buyers as you want, remember that a red clover blossom contains less than one-eighth of a grain of sugar; that 7,000 grains are required to make a pond of honey; that a vagabonud bee, seeking everywhere for sweetness, must obtain this material from 56,000 clover heads. Remember, too, that the bee is compelled to insert its proboscis separately into each flower tube and that there are about sixty of these to each head.

"Remember, also, that in performing that operation sixty times 56,000, or 3,360,000 times, the bee gets only enough nectar for one pound of honey—and then doesn't get the honey. So what the hell are you crabbin' about?"

A classic that should be pasted on the first page of every salesman's portfolio.

* * *

OUTSIDE of having been given only a fleeting view of the new Plymouth six, this commentator knows little about the product Walter Chrysler is getting ready to launch on the automobile market. The job looks like 100 cents on the dollar, but how about performance?

Well, as to that, we repeat the story we get from Varley Young, just back from Indianapolis. Young, the veteran Barney Oldfield and Billy Arnold, Indianapolis race winner and former A. A. A. champion, left the Hoosier metropolis last Friday, each in a Plymouth six and bound for Detroit. The first 140 miles of the homeward-bound trip was made in exactly 139 minutes, according to the aforesaid Varley Young, and he isn't given to spoofing. And this was in afternoon traffic.

* * *

PACKARD, USUALLY RETICENT, **contributes an interesting paragraph to today's effort in the way of proving the low cost of upkeep in the matter of normal repairs and maintenance.**

Checking with its distributors, Packard declares that the average mechanical maintenance cost of current Packard models is actually only three-tenths of a cent per mile. This, the company says, is only $30 for 10,000 miles, an average year's driving.

Going through the dope on factory service, we discover that the shipment of service parts during 1931 averaged only $15.57 per vehicle for all Packard cars and trucks in the United States.

Other service department records show that among the quarter of a million Packard cars and trucks now registered in the United States 51 per cent. are five years or more old. Among the 11,040 Packard trucks now operating in this country the average age is even greater. The youngest Packard truck is nine years old, and more than 10,000 are ten years or more old.

* * *

OUR GREATEST PROBLEM **out here is how to get our stuff into the New York office in time for publication—that is, when we depend on the mails. Therefore we are particularly delighted to learn of a quick-trigger service fostered by the General Air Express and made possible through the co-operation of the Postal Telegraph Company.**

For instance, if we want to ship something to New York to reach there that same afternoon, we can hand it over to the Postal Telegraph Company before 11 o'clock in the morning. We stick on a three-cent stamp to placate Uncle Sam. The air mail reaches New York by 4.30 in the afternoon, and then Postal picks it up and delivers it by messenger before 5.30 p. m., and all for the small fee of $1.25. I'm passing this information along to you.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, success, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

STUDEBAKER PROMOTES CREATIVE SELLING

By MICHAEL FIELDING

We've heard a great deal about creative selling in the automobile business in recent months. All of the more aggressive organizations in the industry have turned enthusiastically to "Selling—1932 Style," since Studebaker started the ball rolling at the beginning of the year.

To many it must appear strange that it has taken the automobile industry so long to discover an obvious fundamental of sound distribution. Creative sales effort, the effort expanded in finding "suspects" and converting them into prospects—in other words, getting them into the market—has always been recognized as a prerequisite of successful selling. Yet, why now should motor car manufacturers suddenly conclude that the solution to their present-day sales problems lies in creative selling?

The truth is, as every fair-minded automobile man will readily admit, that selling motor cars became too easy in the years before the depression. The automobile has a natural consumer appeal all its own. This is seen in the almost universal desire among Americans to own and drive a car. Under normal conditions, therefore, little was required to sell the average man or woman the idea of having a car. Accordingly, salesmen came to take this desire for granted and contented themselves merely with convincing the prospect that the particular make of car they were offering was the one he should buy, as against that of some competitor.

In times of plenty this plan worked admirably. The industry as a whole encountered small difficulty in finding prospects for its product, and selling cars simply developed into a competitive battle of makes, in which the salesman with the glibbest tongue usually captured the deal. In the majority of cases even the deal was given its first impetus in the buyer's mind by the buyer himself without any aid from the salesman. Apparently all the latter had to do—and a great number of them actually did—was to sit around and wait for the prospect to walk in and, after a more or less cursory sales talk, persuade him to put his name on the dotted line.

While the above statement may appear to have the complexion of gross exaggeration, it is really pretty close to the truth. In a nation-wide survey made by the Curtis Publishing Company last year, it was ascertained that 77 per cent. of 4,300 new car owners interviewed made the decision to buy on their own volition. Conversely, therefore, there were only 23 per cent. who were actually sold the idea of buying a car.

The survey revealed a condition that all automobile men recognized: namely, that too much assurance was being placed by salesmen on the public's desire for car ownership, as well as on the fact that, speaking generally, automobile owners as a group devoted a considerable part of their spare time selling their neighbors on buying a new and better car. Thus, automobile selling deteriorated into a clerking type of salesmanship, in which the all-important missionary work of digging out suspects and getting them into the market was being neglected.

In many selling fields, most of the sales effort is directed toward getting people into the market for the product. Life insurance is perhaps the most notable example of this. Ninety per cent. of the insurance salesman's time is spent in selling the idea of insurance, and a mere 10 per cent. the particular company he represents. Insurance salesmen as a class are highly trained in the art of getting people to spend money for something that has little or no natural appeal. Their sales record in the depression year of 1931 was approximately $18,000,000,000 worth of insurance as against $20,000,000,000 in 1929.

The great need in the automobile field in 1931 was for the insurance type of salesmanship. But manufacturers failed to recognize it. As a result, "digging for pay dirt"—finding "suspects"—was sadly overlooked. The purchasing power was there, but buyers weren't exposing themselves as readily as before. For the most part manufacturers concentrated on fighting desperately with each other for the business of those who got themselves into the market, instead of devoting themselves to stilling the fears that gripped the hearts of "suspects," many of whom could in all probability have been sold.

With the dawn of 1932, however, realization of the true condition impressed itself upon Paul G. Hoffman, president of the Studebaker Sales Corporation of America, who recognized the drastic need for a creative form of salesmanship. He saw the success of endeavor along this line in a thorough and intelligent drive to reach the entire "suspect" field, or as great a portion of it as possible, and sell it the idea of buying a new car. "Suspects," for Studebaker's purpose, embraced all owners in America of a 1926, 1927, 1928 and 1929 automobile who originally purchased the car new.

A check revealed that, in round figures, 11,400,000 passenger cars were sold new during the period in question, and that at least 50 per cent. were in the hands of original owners. A supplementary survey in Allegheny county, Pennsylvania, showed the percentage to be 65. For the sake of conservatism, therefore, Studebaker elected to use 60 per cent. as a reasonable premise, revealing a minimum of 6,840,000 cars of 1926-1929 vintage gracing, or disgracing, the garages of their original owners.

Here were "suspects" ripe for the picking. Names and addresses of all 11,400,000 owners were of course available through registration lists, and a simple method was hit upon to isolate original purchasers from those who bought the cars registered second hand. The corporation thereupon devised an effective selling plan which was pre-proved in a number of key cities.

Louis K. Manley, assistant sales manager of the Studebaker Sales Corporation of America, and for ten years prior to his association with the corporation dean of the School of Business and the Bureau of Business Research of the University of Pittsburgh, himself went to New York. There, working as a retail salesman, he devoted several weeks to putting the plan to a practical test under the same selling conditions confronting salesmen all over the country.

It was also conclusively determined at the time that the country's purchasing power was but slightly impaired. Official figures showed that savings bank desposits on June 30, 1931, stood at the staggering total of $28,250,000,000, with an additional billion and a half hoarded, according to the United States Treasury Department.

With this wealth of data in hand, Studebaker began a systematic training campaign among its distributing organization. At a series of unique sales clinics held in various strategically located cities throughout the country, distributors, dealers and their sales forces were initiated into the "secrets" of Studebaker's creative selling plan and urged to adopt it for their own use.

Speaking briefly, the various factors making up the plan are these:

1. The company determines, from investigation and test, who the real "suspects" are; men in all probability able to buy a new car if they wanted to and who could very likely be interested in doing so.

2. The dealer or his sales manager instructs his salesmen in a simple method of separating the chaff from a prospect list of this type, culling only those names which offer real promise of business.

3. The salesman, on his part, reversing the previous tendency to work old prospects, devotes the greater part of his time to new "suspects," attempting primarily to get them into the market for a new car, and then, as a secondary step, selling them on his own particular product.

This new plan, which in its initial tryouts achieved remarkable success, has since convinced its sponsors of its basic soundness. In Studebaker's case, the salesman's recognition of his personal responsibilities comes as a fitting climax to the recognition of similar responsibilities by the higher-ups. In short, Studebaker, cognizant of its own responsibilities, abstains from "passing the buck" to its dealers, and the dealer, in turn, has learned that "passing the buck" to his salesmen doesn't bring business. It is team work at its best!

(To Be Continued)

INDIANAPOLIS SHOW DATES FEBRUARY 4-11

Indianapolis, Ind., Nov. 1.—February 4 to 11, inclusive, have been set as the dates for the Indianapolis Automobile Trade Association's twenty-second annual automobile show in the Auto Show Building Indiana state fairgrounds. E. G. Henry is manager.

Used Car Selling Prices

Automotive Daily News in this department offers for the benefit of its dealer and salesmen readers a compilation of prices at which used cars have within the past few days been offered for sale by reputable dealers in various cities. These prices will vary on condition and from other causes. They are not presented as being the exact prices at which these models should be sold, but simply as the prices at which they have been offered for sale by dealers in the various cities. Other cities will appear in subsequent issues of this paper.

New York

	1931	1930	1929	1928
Auburn	575-645cp	265	250-295cp	125
Buick (Light)	595dc	....	265t-345	195cp-295cp
Buick (Medium)	695-745cp	450-545	....	....
Buick (Big)	895-945	495r-845d	....	....
Cadillac 8	1645	975-1275	550-745	....
Cadillac 16	1875	....	....	....
Chevrolet	310ccp-395	195c-235c	99c-245	....
Chrysler 6	375	365	....	....
Chrysler 8	575-675	....	....	....
Chrysler Imperial	....	....	....	250
Cord	1075ccp	....	....	....
De Soto 6	....	235r-395	285c-375	....
De Soto 8	....	295	....	....
Dodge 6	325cp	325-375c	225	....
Dodge 8	....	275cp	....	....
Essex	345c	....	125c	....
Ford	250c-345v	145cp-215c	115cp	....
Franklin	925ccp	825ccp	575-595	....
Graham 6	....	195c-285	245-295	....
Hudson	495	395	....	....
Hupmobile 6	....	....	145r-295	200c
Hupmobile 8	....	495-525	....	....
La Salle	1195cp	875-975c	545-625	....
Lincoln	....	945-1050	....	300
Marmon	345cp-475b	....	....	....
Nash 6	345c-495	250-275	195cp	....
Nash 8	550cp	....	....	....
Nash Advance	850ccp	695	....	....
Oakland	....	375	....	....
Oldsmobile	545cr	285	225cp	150
Packard	1450-1650	675-875r	395-545r	295-325
Pierce	....	850-895cp	395c	275-345
Plymouth	....	225cp	160	135
Pontiac	445cp	245cp-275cp	110r	....
Studebaker 6	395	....	....	....
Studebaker Dictator	575	450c	....	....
Studebaker Commander	....	....	290	95
Studebaker President	925d	395	185-350	....
Stutz	675c	650cp-875cpd	....	....
Willys-Knight	325r	235cp	235	....

d-Le Luxe. c-Coach. cp-Coupe. ccp-Convertible coupe. b-Brougham. t-Touring. r-Roadster. v-Victoria. cab-Cabriolet. Where no distinguishing mark follows the price the car offered is a sedan.

Dealer Activities

WORCESTER, MASS.

Jenkins & Robinson, 69 Central street, were hosts to more than a hundred garage and service managers and owners and a number of fleet superintendents, the occasion being the introduction and demonstration of the Weidenhohh motor analyzer which was recently acquired. A factory representative was present and explained in detail the performance of this newest method of diagnosing the mechanical ills of automobiles. After this demonstration a buffe. lunch was served to the guests and a general discussion of various problems was held.

* * *

ATLANTA, GA.

John E. Smith of the John Smith Motor Company has been named sub-chairman of the Atlanta share-the-work committee, in charge of the automotive and electrical groups.

* * *

Constitutionality of the 1931 Motor Vehicle Act has been upheld by the Georgia Supreme Court. The law had been attacked by the Montgomery-Atlanta Motor Transport Lines as an infraction of the Interstate Commerce Commission regulations. The higher court, however, upheld the Fulton Superior Court in refusing to enjoin the commission from interfering with the business of the motor freight line.

* * *

Advancement of two prominent men in the Atlanta organization of the Chevrolet Motor Company has been announced by C. G. Smith, zone manager of the company. J. M. Glass, formerly zone sales promotion manager, has been promoted to the position of sales promotion manager, while A. K. Dearing, who has been city sales representative for the company, succeeds Mr. Glass in the post of sales promotion manager.

* * *

NEWARK, N. J.

The Newark Buick Corporation has been appointed Pontiac dealer in this city and has acquired the new and used car stock of the Bonnell Mason Company of 360 Central Ave., which formerly handled Pontiac cars. Joseph Bell, general manager of the Newark Buick Company, has been at the head of the local Buick dealership for the last twenty-four years. Roy F. Hollister has been Buick service manager for fifteen years. In the repair shop Louis Frick has been in command for the last ten years. George W. Christian, the sales manager, has been connected with Buick for a number of years.

* * *

IOWA

The Pittsley Motor Company, Graham-Paige dealer and distributor, Des Moines, has moved to a new location at 1223 Locust St., the move giving the firm room for expansion, according to L. W. Pittsley, manager. Additions to the staff include P. H. Pottinger and E. E. Sands for sales and Harry Venard as service salesman.

* * *

More than fifty Ford dealers and salesmen in the Fort Dodge territory of the Ford Motor Company gathered at Hotel Warden for a fall sales conference. The entire northwest Iowa territory was well represented, officials from Des Moines being in charge of sessions.

* * *

K. E. Staley and James Carney, Des Moines, sales representatives of the Chevrolet Motor Company, presided at a meeting of dealers and salesmen in Fort Dodge, there being more than twenty-five dealers and salesmen present for the program staged in Hotel Warden.

* * *

Automobile sales in Polk county are on the uptrend, 322 new and used automobiles having been sold during the week ended October 26, according to a compilation made and broadcast by the Des Moines Chamber of Commerce. Of the total sold, 285 were used automobiles, represented in 571 transfers, 29 new passenger automobiles and 8 new trucks.

* * *

SEATTLE

S. L. Savidge, Inc., Nash distributor in this territory, has been appointed state distributor for Pennsylvania tires. This marks an important step for the Savidge company, and is in line with prominent dealerships expanding lines during this period of decreased new car business. "We plan to turn over two to three carloads of tires every month," said Mr. Savidge. "Our territory covers the entire state of Washington and already forty-six dealers are established."

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday, Monday and Holidays, and Tuesday When a Holiday Falls on Monday

AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION
350 Hudson St., New York, N. Y.

O. J. Elder, President. H. A. Tarantous, Vice-President. Alexander Johnston, Secretary.
Entered as second-class matter August 27 1925, at the post office at New York, N. Y., under the Act of March 3, 1879.
350 Hudson St., New York N. Y. Telephone CA nal 6-1000

MEMBER A. B. C.

Mail subscriptions to CIRCULATION DEPARTMENT 1926 Broadway
Telephone TR afalgar 7-4500.

Subscription Rates: One year, $12.00; two years, $20.00 for United States and Canada, also Mexico, Cuba and Panama.
To Other Countries. One year, $15.00; two years, $26.00. Single copies 5 cents.

WEDNESDAY, NOVEMBER 2, 1932

ADVERTISING AND BUSINESS HEADQUARTERS

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Service Saves the Day

HUMAN beings do not as a general rule like to acknowledge that they are wrong or that their judgment has been in error. Realizing this rather fundamental trait in human character, we recently wondered somewhat to hear an automobile dealer, a man well known in his local territory as a shrewd and successful merchant, remark: "Every time I think back of 1930 I could kick myself for the money that I could have made and didn't."

Our query drew out the story, which should have some practical value for some other dealers. "Until 1930," this dealer said, "I did not find out what service really meant or what a service department could do for a man trying to sell automobiles in a falling market. Of course, I had a service department, and I took a certain amount of interest in it. I had sense enough to know that my job was not just to sell new automobiles. I knew that I had to take care of my customers and keep their cars running efficiently or I would lose all my resales. I wasn't quite as dumb as the boys who used to farm out their service; not on your life. I thought too much of selling my clients more than one car.

"But do you know it wasn't until 1930 that I ever made a cent out of my service department? I've got to sell quite a batch of new cars to clear the overhead on my place. I've got a paint shop, a battery station to keep up, and it runs to money.

"Well, by the middle of 1930 it was evident that the party was over. The lemonade was all gone and the orchestra had gone home. Sitting at my desk one night, I began to realize that I was going to see red ink before many months had passed.

"Analyzing my business didn't bring me much pleasure. New car sales were dropping, and I could see that if the decrease continued the net would not be large enough to let me show a profit. My used car department had never been the debit on my business that it is with some dealers, but breaking even was the best I could hope for, and that left me staring at the service department's page in the ledger.

"I'm going to confess that I couldn't see how there was much chance of making money on service. I had maintained the shop as a convenience to my customers. I wanted to keep them sold on the Blank car, and to do that I had to assure them of continuous use of their vehicles and that means service in any language. But I never had figured a profit out of the shop.

"There didn't seem to be any very plain road out of my trouble, and I did something that most dealers would probably not think of doing. I went out to the factory to see if the brass hats had anything to suggest, and, anyway, I wanted to hear what they thought about the future. It happens that my relations with my factory have always been close and cordial. The big bosses have never been the ogres to me that they seem to be to some dealers.

"At any rate, I went to the factory and stated my case to the sales manager. He frankly told me that the executives of the company expected to see things worse before they were better and that all their advice was to trim sails for a stormy period. Then he suggested the service department. I showed him my statement, which showed that I had made $2,000 from the service department in 1929 and that I probably would have a profit of $700 to $800 for the first six months of 1930.

"The sales manager called in the head of the service department, and we three went to the mat. The service man showed me where I could increase profits in the service department. He made a date to come down to my place and go over the proposition with me.

"Well, to cut a long story down to an outline, the factory service man came to my plant. He went over the shop from end to end. He suggested a moderate investment in new machinery, a rearrangement of the shop layout and urged me to ask the advertising department for some service selling material. I went to it as hard as I could. There wasn't anything else to do; it was root, hog, or die, and I rooted.

"Today I sell service harder than I do anything else. I advertise in our local papers, use billboards, direct letters and personal calls by salesmen. Also I have a system of signs directing people to our shop. It has worked. My shop profits have been increasing steadily. They were twice as large in 1931 as they were in 1930, and this year they are going to go a little beyond 1931. And here's one scholar who isn't going to be caught again. No matter if we go back into a boom in 1933 or 1935 or whenever, our service department is going to be sold harder than any other unit in the place."

New Plymouth 6 Announced In Great Radio Hook-Up

(Continued from Page 1)

testing devices, discussion among research engineers as they go about the task of giving life to the idea born in the directors' meeting earlier. The audience meets Fred M. Zeder, chief engineer. With Mr. Zeder talking the audience learns the inside story of the new Plymouth creation.

From the "lab," the audience, without leaving its seats, is taken out to the proving ground, where, through voice and sound effects, they "watch" the driving tests conducted by Barney Oldfield and Billy Arnold.

During the half-hour intermission following the first hour of broadcast dealers attending the various meetings were permitted to view and comment on the new Plymouth Six. The half-hour broadcast which followed the intermission was given over largely to replies to queries telegraphed in by dealers from all over the world. Telegrams were received from points as distant as Australia and one query came from sunny Spain. All queries received which could not be answered during the broadcast will be answered later by letter.

At the close of the broadcast dealers and salesmen attending the several meetings were treated to a sound motion picture, showing the new Plymouth six being given the works by a troop of hard-boiled test pilots at the proving ground. The picture also covered the birth and development of the new idea.

Other speakers, in addition to Mr. Chrysler, on the radio conference included B. E. Hutchinson, chairman of the board of the Plymouth Motor Corporation; Harry Moock, Plymouth's general sales manager; Merle Thorpe, editor of Nation's Business, and Fred Zeder, vice-president in charge of engineering of Chrysler Corporation. The affair was watched with interest by business executives all over the nation, as it marked the first time that radio has been used to present a new model to a dealer organization.

In New York, 3,000 Plymouth dealers and salesmen gathered in Mecca Temple to hear the conference. Byron Foy, vice-president of the Chrysler Corporation, presided. Meetings were also held in Chicago, Detroit, Cleveland, Indianapolis, Washington, D. C., Los Angeles, San Francisco, Boston, Denver, Buffalo, Atlanta, Memphis, Oklahoma City, Dallas, Kansas City, Mo., Portland Ore., Seattle, Cincinnati, Minneapolis St. Louis, Mo., Omaha, Philadelphia and Pittsburgh.

The Plymouth radio conference was the first program ever covered by insurance. The program was covered by a $500,000 policy which Mr. Chrysler had taken out with the National Surety Company. The policy covered interruptions of the program by any wire troubles, mechanical difficulties, SOS calls or any other unforeseen happenings which might interfere with the broadcast.

Announcing prices of the new Plymouth six and revealing the forthcoming progressive policies of his company, Walter P. Chrysler made the following address over his international radio business conference today:

Harry G. Mook, sales manager of Plymouth, being interviewed by Lowell Thomas, who acted as master of ceremonies at the Plymouth announcement international radio broadcast.

"Ever since the advent of radio I've been successful in dodging microphones. I've made all kinds of excuses. Today the shoe is on the other foot. They've kept me waiting fifty minutes for this opportunity. Today I wanted to talk and nobody would let me.

"Gentlemen, this has been one of the great days of my life. I can only think of one other to equal it, and that was in 1924, eight years ago—that day when the Chrysler Corporation announced the first car to bear my name.

"Many of you men, many of you dealers and distributors, who are listening in were associated with me at that time. You shared that thrill with me. You also shared the hope and the anxieties that went with it, and it gives me great joy to have you with me again today.

"Will you ever forget watching the career of that automobile? I never shall. I don't think it is any exaggeration to say that it put us two years ahead of the whole industry.

"I was proud of that car. But I was even prouder of these engineers, inspired and led by my good friend Fred Zeder, who created it and who have stood by me through thick and thin.

"It is eight years since that day—and a great many things have happened. History has been made and you have all helped to make it.

"You have seen Chrysler Motors products blaze the way with practically all the major engineering developments of this industry.

"You have seen Plymouth forge ahead to a dominant position in the low price field.

"If anybody in this country had any doubts about the intention and the ambitions of Chrysler Motors, I think they were all answered on April the 3 of this year.

"On that day, when we announced the new 1932 Plymouth with floating power, I said, "Plymouth will fight for leadership in the low-priced market—look at all three before you buy," and I meant it.

"Thousands, hundreds of thousands of people made that comparison. They came into your showrooms. You took them for a ride with floating power. And they thanked their lucky stars that somebody, at last, had built the kind of car that they wanted.

"Gentlemen, the Plymouth car has been a phenomenal success this past year. Now the time has come for us to increase the pace, to uncork a new burst of speed and energy, and, believe me, we've got plenty of both.

"For two years we have been working on the new Plymouth Six. We have spent more money on research and engineering for this new six than at any time since 1928. I am proud to say that everything in it is new, absolutely new.

"And I don't mind telling you that these engineers have been running me ragged. They never let me alone. They're waiting for me on the doorstep in the morning. They've always got something new to show me. They keep after me all day long and it's often 2 o'clock in the morning before I can give them the slip. But I love it. I couldn't be happy without it. And when I'm away from Detroit I find myself counting the hours until I can get back. To me, this is the greatest thrill that the automobile industry can possibly give—real action and real progress.

"I want you to understand how I feel about this new Plymouth. I would like you to see it from the economic point of view. The public has been generous to us. I want you to see why this new car was built to keep the faith with them.

"The corporation occupies an enviable position. We are not handicapped by long-term raw material contracts, entered into at high prices. At a moment's notice we can turn to any source of supply that offers the best at the lowest cost.

"Moreover, we did not make the mistake of overexpanding our factory facilities during the boom period of high commodity prices.

"As a result of our increasing percentage of automobile sales—and I am referring now to De Soto, Dodge and Chrysler cars as well as Plymouth—we found ourselves in a unique position.

"Amazing developments by our engineers plus lower raw material costs made an outstanding new car at revolutionary prices a possibility.

"To put such a car into being called for one of the greatest factory retooling operations in the history of the industry. It required courage, but we did it, gentlemen, and because we did it, we are today able to place a price on the new Plymouth Six that will make it the most sensational value of all time.

"I suppose you fellows are waiting for me to say something about the prices of this new Plymouth Six. Well, here they are:

"The new Plymouth Six, four-door sedan, gentlemen, carries the remarkable price of $575; $60 less than the four-cylinder sedan of this year.

"The convertible coupe is priced at $595; $50 less than the four-cylinder convertible coupe.

"The price of the coupe with rumble seat is $545; this is $65 under the present coupe price.

"And the business coupe will be priced at $495; $70 less than the price of the present business coupe.

"Gentlemen, today's conditions place new responsibilities upon great industries. This is particularly true of our industry.

"You are familiar enough with the history of past depressions to recall that the automobile industry was the first to lead the way back to better times. We have such an opportunity before us today.

"All indications seem to say that this is the psychological moment. The time has arrived when one bold

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Production - - Engineering - - Factory

FUNDAMENTALS OF ARC WELDING

By D. B. PATTERSON,
Vice-President of the Harnischfeger Corporation, Chicago

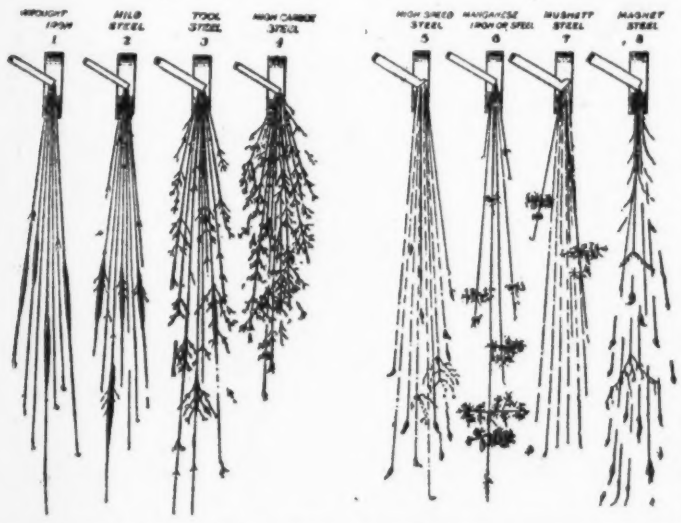
(This is the second article in a series by the vice-president of a company which is a large manufacturer of welding equipment. Mr. Patterson gives in these articles the basic principles for the successful carrying out of welding operations. The suggestions will be interesting to every one in the service division of the industry and to many others besides.)

In continuing this series of articles on arc welding we will start with some actual lessons which are, I believe, self-explanatory.

Always bear in mind that the prerequisite for any good weld is that the areas to be joined should be clean, that is, free from dirt, rust, scale, grease, paint or oil. Any of these will cause a porous, rough and brittle weld. The wire scratch brush, next to the electrode ho' ler, is the most important tool of the arc welder. It cannot be used too much or too often.

Take a scrap plate about 12 inches square, from ¼ to ⅜ inch thick. Clean the table with wire brush and also remove all dirt, rust and scale from the plate itself.

With chalk or soapstone draw several straight lines on the plate, in-



sert a 5-32 inch or 3-16 inch electrode in the holder, set the machine for the correct ampere rating as given in the table and try to lay a bead following these straight lines. See Figure No. 1. The electrode should be held perpendicular to the plate; the operator should practice to weld from left to right and vice versa; also in laying down the bead, traveling away from himself as well as toward himself.

At least two to three hours of practice should be spent on this to teach the beginner how to strike and hold an arc; also to accustom his eyes to work with helmet or hand shield; that is, under arc welding conditions. When the operator can follow these lines and lay down a fairly decent looking bead, let him reduce current by about 50 amperes and lay down a bead; also increase it by about 50 amperes over normal and do likewise. In the first instance, that is, with insufficient amperes, the condition described in Part 1 will exist, namely, not enough heat, characterized by very little fusion to the parent metal and a considerable overlap, so that with chisel and hammer it is possible to knock off the entire bead. In the second instance, too much heat, the bead will be flat and rough, full of pockets and blow holes; the fusion metal, being burned, will be brittle and full of slag; besides this, there will be splatter all over the plate.

Let the operator procure another piece of scrap plate about 12 inches square and from ¼ inch to ¾ inch thick, using either 5-32 inch or 3-16 inch wire. The purpose of this lesson is to teach the operator the proper building up of several layers of fusion metal. Let him lay down a straight bead and adjacent to the first one and fusing into it a second, third and fourth, and keep this up until a block is built up about 4 inches to 5 inches long, 2 inches wide and 1 inch thick. Let the operator saw this in half, grind the cut smooth on an emery wheel and for about a minute etch the cut with a diluted solution of hydrochloric acid (about 10 per cent.). This will plainly show whether each bead has been properly fused with the adjacent one. Needless to say, each bead, after having been laid, should be vigorously brushed with the wire brush to remove the oxide and scale.

It will be advantageous to have the operator do considerable experimenting with different sizes of wire, having not enough, sufficient or too much heat (that is, amperes; the voltage on some welders is regulated automatically), in order to learn that there is a correct heat—that is, the right amount of ampere flow in the welding circuit for any given size of welding wire on any particular job, the variation between different jobs being caused by the respective difference of heat-dissipating capacity of the parent metal.

Let the operator utilize another piece 12x12x¼x⅜ inches and by means of blocks mount on the table on an angle of 45 degrees. Then let him practice for several hours, first laying single beads and then also building up small pads of fusion metal as in the previous lesson.

When the operator, after several hours' practice, obtains sufficient proficiency in this, let him mount a similar plate at right angles to the table, that is, perpendicular, and begin to lay beads first horizontally and then perpendicularly. Several hours should be spent practicing this.

After this the operator should try to build up a pad by laying two single vertical beads and fill in between by an "S" movement of the electrode.

Let the operator procure two straps of iron about twelve inches long four inches wide and from one-quarter inch to three eighth inch thick. Let him mount them on the table at right angles with the edges butting together.

One end should be tack welded tight, with the edges touching; on the other end about one-eighth inch space should be left, as the shrinking of the cooling fusion metal will gradually draw the plates together. (In this type of weld the general rule for spacing to compensate for contraction is one-eighth inch per foot length.) At first, the path of the electrode will be a movement straight across from edge to edge. However, as the plate becomes hot, the liquid fusion metal at the bottom of the groove will have a tendency to fall through. To prevent this, the electrode should be moved in snake-like curves. This will reduce the heat in the center, but

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SHORT CUT MILLING MACHINE

The Producto Machine Company, Bridgeport, Conn., is offering the No. 42 Producto-Matic, a new machine for short milling cuts in a straight or curved path. Simple, inexpensive fixtures it is stated make possible a quick change over the short-run or long-run jobs, thereby giving the machine a wider scope than previous designs.

Designed for universal use in milling departments, the machine has many improvements, among which are:

1. Large shaper type ram: This is 41 inches long by 21 inches wide. A hardened steel roll and adjustable cam shoe secure horizontal movement of the ram. When the cutter, which has a vertical as well as a horizontal stroke, is at the farthest point of milling the ram is not extending more than 6 inches out of its bearing. Both ram and ram bearing are extremely heavy when the type of cut taken is considered.

On the forward end of the ram is mounted a large apron type of cutter bearing slide, 28 inches high by 26 inches wide, with the cutter spindle bearings cast integral. Cutters up to 13 inches can be used.

2. Two-station type of work table fixture indexing automatically 180 degrees: An adjustable saddle on the work table receives the work fixture turret. The work fixture base is machined with T-slots and is made in two sections. In the main section is the transmission, two chambers for the change gears controlling the feeds and speeds, and the drum cam. By making the top of the base extra heavy a main slide for the machine is provided. Motor drive is ordinarily provided. Average motor size: Seven and one-half horsepower.

The principles of automatic operation, loading and unloading while milling and short cutter travel with the work stationary make it possible to obtain high productive capacity from the machine.

Other features of the machine are: A drum cam controlling automatically all functions of the machine; worm and worm gear driven cutter spindle; cutter speeds from 30 to 1,400 r. p. m., and a simplified transmission drive.

CLEANER FOR CAR BODIES

The International Metal Polish Company, Indianapolis is announcing an new paste cleaner which completes the Blue Ribbon polish line for the automobile trade.

This new product is designed especially for automobile laundry use where a speedy cleaner is needed before the application of wax Blue Ribbon. Cleaner does not take the place of the Blue Ribbon automobile body polish in liquid form, but rather supplements this polish for laundry use. Cars that are allowed to go untouched for many months have a film of oxidized lacquer on the surface which can be removed with several applications of liquid body polish.

This new product will be offered in two sizes.

NEW PLASTIC FOR WINDSHIELDS

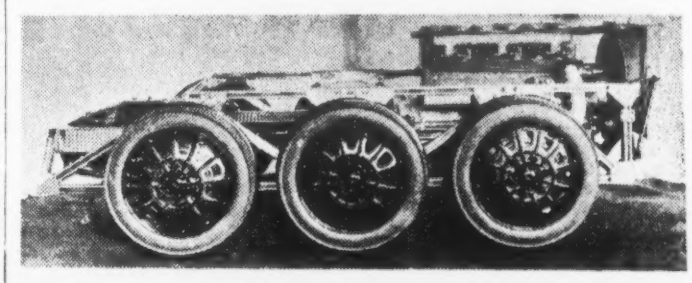
Springfield, Mass., Oct. 31.—A new plastic for use in non-shatterable windshields has been perfected by the Fiberloid Corporation of Indian Orchard.

The new material is extremely clear, thus providing better vision in windshields in which some adhesive substance is used to prevent the glass from flying in the event it is broken.

The Fiberloid Corporation, which supplies the leading manufacturers of non-shatterable glass in the country with plastic, is alone in the development of the new sheet material and intends to produce it on a large scale as soon as conditions warrant. The plastic is non-inflammable.

Fiberloid has been operating at a fair rate of production within the last few months.

First Pneumatic-Tired Rail Car Delivered to Reading Co.



The Reading Company has just received the first forty-seven passenger Budd-Micheline pneumatic-tired Diesel-electric rail car to be purchased in America.

The front or power truck of this car is equipped with a 125 horse power Cummings Diesel engine directly conected to a Westinghouse 250 volt generator of special light-weight construction. In the power truck are mounted the batteries and control. The rear or traction truck has a single high-speed Westinghouse motor mounted under the bolster. The double extended shaft drives the front and rear axles of the truck through a 9.1 Timken differential worm.

The car weighing approximately 22,000 pounds has a speed of from fifty to fifty-five miles per hour. The tires are thirty-three by four and a half, carrying a pressure of ninety-five pounds.

Not alone are revolutionary designs to be found in the car body, but also in the power and traction trucks just described. The power truck has a "shot-welded" stainless steel frame weighing 281 pounds, while, with the engine, generator, batteries, axles, wheels, etc., the total weight is 6,990 pounds.

In the traction truck the "shot-welded" stainless steel frame weighs but 230 pounds, whereas the motor, axles, wheels, etc., make the total weight 4,315 pounds.

The fundamental development work of the E. G. Budd Manufacturing Company, in handling and forming of thin sheets of steel, the far reaching research into welded methods, the fineness of control, all contribute to the fact that the car and truck construction is revolutionary. Relatively overnight, the weight of a self-propelled car of a given seating capacity has been reduced to 33 per cent. of the accepted passenger coach having no power, as used on Class I roads.

CHASER GRINDER

The National Acme Company, Cleveland, O., has brought out a small chaser grinder to be used for a variety of work, in addition to grinding tap and die chasers, for which it was designed. This machine is rigid and compact. When desired for portable use it is furnished with a cast iron base mounted on casters.

By lowering steady blocks into place and lifting the front caster off the floor the machine is held stationary while the grinder is being used. It has adjustable parts so that many sizes can be handled. A fully inclosed, ball-bearing motor is used, which connects with the lighting circuit. A double ended motor spindle carries a guarded grinding wheel on one end, and a guarded wire brush on the other. Both ends may be equipped with wheels for general purpose grinding. Heavy iron casting forms the machine column, on the face of which a dovetail supports the knee. Accurate vertical adjustments are made by means of graduations on the handwheel. A V and a flat guide support the table, which moves forward and backward with a travel of 13 inches. Table support slide is gibbed for adjustment. The vertical slide has a travel of 6 inches, while the cross slide moves 5½ inches. Cast-iron aprons protect all slides.

COLLAPSING TAP

A class SL collapsing tap is a new product being introduced by the Geometric Tool Company, New Haven, Conn. It is claimed that without purchase of additional parts it is possible to use the tap in stationary holders or live spindles. The instrument is suitable for either right or left hand tapping and may be adjusted as to size. When operated as a plate trip tap or as a spool trip tap, it may be reset by a fork or yoke riding in the spool section of the closing sleeve, or by the handle. When used as a lever trip tap the handle is contacted with a stop. The tap is so constructed that tapping to a shoulder or to a bottom is possible without using special or overhanging chasers. A feature is a sturdy, rigidly supported chaser.

GENERAL PURPOSE BATTERY CHARGERS

The Valley Electric Corporation, St. Louis, Mo., is offering a new general purpose battery charger, which is designed to charge one to fifteen batteries at six amperes. The unit has a fully inclosed metal case. Two rheostats are used with one-half ampere charging steps. The transformer is oversize, it is claimed, to give cool operation. The tapped transformer is designed to give economical charging costs. The unit connects to the lighting circuit. An accurate ammeter is included. There is an automatic bulb current regulator. There are no moving parts to be lost or adjusted. It is also claimed that the unit will not discharge batteries, due to line failure. The device is priced at $37.50 complete with six ampere bulb.

UTAH ADOPTS STANDARD GRADE CROSSING SIGNS

Salt Lake City, Utah, Nov. 1.—The Public Utilities Commission has issued a general order adopting, with some modifications, the recommended standards of the American Railway Association for all future installations of signals and signs at railroad grade crossings in Utah.

FUNDAMENTALS OF ARC WELDING

(Continued from Page 5)

provide additional heat for the relatively cold outer edges of the plate where good fusion is necessary to get maximum strength.

The finished weld should be of smooth appearance without bumps, depressions or dribbles over the edges. After the specimen has cooled, let the operator break it apart by means of a sledge hammer. The break should be approximately the center of the weld. If it is along the edges and same appear black or bluish, no fusion was obtained at that point. The arc was not properly directed to the edges or not held there long enough as the fusion metal merely ran down over this portion. Too long an arc will also cause this, just as bright spots in the fusion metal indicate gas pockets and slag and oxide inclusions prove that the electrode traveled too fast.

Now let the operator mount similar specimens inclined on the table at an agle of 45 degrees and finally in a vertical position and repeat the foregoing procedure until a good weld is obtained, that is, fusion must extend through the bottom of the groove and plainly show on the inverted side.

Probably 90 per cent. or better of all arc welding done will be on one or the many alloys of iron. (The terms iron and steel are rather indiscriminately used, with much confusion resulting, although each has a very definite meaning in metallurgical science.) Chemically pure iron (Fe atomic weight 55.84, density 7.8, melting point 1,530 degrees centigrade, forming the oxides Fe0, Fe203, Fe304) is a silver gray, very soft, ductible and malleable metal rapidly oxidizing under ordinary atmospheric conditions with formation of a loose, soft ——— (2Fe)3x3H20), therefore useless for all practical purposes.

All products of the so-called iron and steel as commercially used today are primarily an alloy of the chemical elements, iron and carbon. Yet the essential physical characteristics of such materials are greatly affected by the small or large additions of other substances, some of which are merely impurities derived from the ore, fuels or fluxes used, which cannot be entirely removed in the processes of commercial manufacture without prohibitive costs, such as sulphur and phosphorus, and to a lesser extent the oxidation products with oxygen, nitrogen and hydrogen. Other elements, such as silicon or manganese, may be inherited from the ores utilized.

Metallurgical science has found it advantageous to add other metals, such as nickel, chromium, Cobalt, tungsted, molybdenum, copper, etc., to modify or improve important qualities, such as ductility, hardness, toughness, or the resistance against abrasion or corrosion. Furthermore, metals like titanium, vanadium, uranium, cerium, magnesium, aluminum may have been introduced into the iron-carbon alloys for the purpose of counteracting harmful properties of impurities, or to increase and accelerate certain desirable qualities and yet may again completely disappear from the metal during the process of manufacture. And even carbon as the primary constitutent of the iron alloy may cause beneficial or harmful reactions which will materially affect the character of the finished metal.

Three factors influence the physical characteristics of all ferrous materials. The first is the ratio of the carbon versus the total iron content. This is very clearly illustrated in the following tabulation:

MECHANICAL TESTS OF ANNEALED METAL

Material	Carbon Content Per Cent.	Ultimate Stress Tons-Limit, Per Sq. In.	Elastic Tons Per Sq. In.	Per Cent. Elongation
Very mild steel ..	0.05—0.15	20—24	12—15	34—28
Mild steel	0.15—0.25	24—30	15—18	28—25
Low carbon steel.	0.25—0.40	30—35	18—20	25—22
Medium steel ...	0.40—0.60	35—40	20—24	22—18
Hard steel	0.60—0.70	40—47	24—28	18—14
High carbon steel	0.70—0.80	47—65	28—35	8— 5

It might be well to mention here that from the chemical viewpoint there is only one compound between iron and carbon, the carbide Fe3C, consisting of 6.6 per cent. carbon and 93.4 per cent. iron, called cementite. But only a certain proportion of the iron as commercially produced will absorb the necessary carbon to form cementite, the excess remaining free. Then through the action of heat various combinations of iron-carbon compounds are formed, which, while chemically identical, yet exhibit radically different mechanical characteristics.

The iron alloys used today are practically all manufactured from molten iron and steel. It is the reactions taking place between iron and carbon during the passage from the liquid to the solid state which greatly affect the final structure of

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PLAN CONSOLIDATION OF ITS MANUFACTURING

Milwaukee, Wis., Nov. 1.—The Solar Corporation of Beaver Dam will consolidate its manufacturing here by December 15. The company, which has leased a plant in this city, will employ about 100 persons in the production of automobile batteries and paint. The company has produced its batteries in Beaver Dam and its paint in Minneapolis. When its Beaver Dam plant burned to the ground recently it was decided to locate in a larger city.

DETROIT HEARS NEW DODGE WILL EMBODY NEW TRANSMISSION

(Continued from Page 1)

indispensable adjunct of the gasoline engined automobile—or with a transmission embodying some revolutionary new principle.

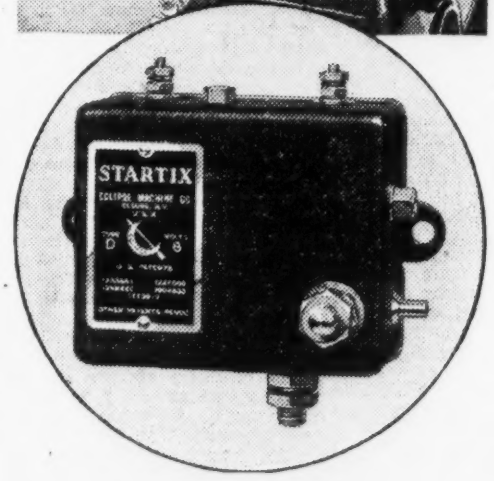
Such a car would be an automotive achievement of the first magnitude, it is said, because it would do away with what engineers at times describe as a "brutal mechanism" which is bound to absorb an appreciable portion of the engine's power output, by having to transmit it to the rear wheels "around corners," as it were.

It is undoubtedly true that numbers of Dodge cars are being factory and hill tested in which there is no evidence of the usual gear shifting or of sounds such as come from even the best designed transmissions. Inquiries at the Dodge plants have so far yielded no explanation. The company's policy seemingly being not to reveal details of the new Dodge until the curtain is drawn from it officially, at the time deemed proper by the management.

ARGENTINE TRUCK SALES SHOW IMPROVEMENT

Washington, Nov. 1.—An upward trend in truck sales during the first eight months of 1932 is reported by Argentine dealers, according to information just given out by the automotive division of the Department of Commerce.

Sales of low-priced cars in this period held practically even with those in the same period of 1931. These sales, however, are reflected in lowered stocks and did not appreciably influence imports.



It's a safer

BENDIX

STARTIX

THE AUTOMATIC STARTING SWITCH

ANY car is a safer car if Startix equipped because Startix is always in full automatic control of the engine while the ignition is "on".

All you do is turn the key — then Startix takes control; starts the engine; restarts it automatically in event of an accidental stall.

Startix is an important aid to free wheeling — keeps the engine running. And it's a wonderful convenience too — no starter button to grope for, perhaps at a critical moment.

Many of the new cars have Startix as standard equipment but it can easily be installed on any car equipped with the Bendix Drive.

ECLIPSE MACHINE COMPANY, Elmira, New York
ECLIPSE MACHINE COMPANY, LTD., Walkerville, Ont., Canada
(Subsidiaries of Bendix Aviation Corporation)

BENDIX

The BENDIX DRIVE
Standard on more than twenty million cars running today. So reliable that its faultless performance is taken for granted.

AUTOMOBILE

CANADIAN TRUCK SALES IN SEPT. TOP AUG. BY 27 UNITS

(Continued from Page 1)

makers in both the passenger and the commercial car fields. In the General Motors group, gains are reported in the eastern part of the Dominion on Cadillac, La Salle, McLaughlin-Buick, Oldsmobile and Pontiac, and in the commercial division on Chevrolet and G. M. C. Ford failed to show an increase in passenger car sales, but gained in commercial car field. Chrysler group showed gains in Chrysler and Dodge passenger sales, and in Dodge commercial units. Studebaker group registered gains in both Rockne and Studebaker passenger cars and Studebaker commercial cars. Gains in passenger car sales were also shown by Willys-Knight, and Dominion Motor's Frontenac, with commercial car gains on Diamond T, Reo, Rugby and Stewart.

The following table shows passenger and commercial sales by makes in the five Eastern provinces of Canada, for the month of September, also for the nine-month period ended September, 1921 and 1932.

Passenger	Sept.	Nine Months Ended Sept. 1932	1931
Auburn	11	150	692
Cadillac	9	95	223
Chevrolet	444	8,596	13,408
Chrysler	71	970	1,936
De Soto	40	884	914
Dodge	56	861	1,461
Durant	62	941	1,675
Essex	146	998	1,806
Ford	529	8,146	13,475
Franklin	0	2	14
Frontenac	102	491	66
Graham	29	405	803
Hudson	14	254	602
Hupmobile	11	214	481
La Salle	5	24	28
Lincoln	0	6	15
McL.-Buick	111	1,820	2,621
Marmon	0	3	33
Nash	7	154	747
Oakland	0	10	120
Oldsmobile	58	633	1,410
Packard	4	75	147
Peerless	0	2	20
Pierce-Arrow	1	22	34
Plymouth	166	2,434	2,321
Pontiac	159	1,756	3,882
Reo	3	57	172
Rockne	55	577	0
Studebaker	45	732	1,063
Stutz	2	2	5
Willys-Overland	60	745	1,195
Willys-Knight	30	234	276
All others	6	63	498
Totals	2,236	32,356	52,148

Commercial	Sept.	Nine Months Ended Sept. 1932	1931
Chevrolet	161	2,065	2,918
Diamond T	7	77	145
Dodge	19	311	537
Federal	1	27	49
Ford	153	1,398	3,561
G. M. C.	34	338	471
Gotfredson	2	32	38
International	13	411	336
Leyland	2	29	32
Mack	2	12	103
Relay	0	0	5
Reo	11	108	293
Republic	0	0	9
Rugby	9	173	352
Stewart	2	36	65
Studebaker	8	119	232
White	1	63	136
Willys-Overland	1	63	75
Willys-Knight	0	2	29
All others	4	111	224
Totals	430	5,465	9,610

New Plymouth 6 Announced In Great Radio Hook-Up

(Continued from Page 4)

step forward on the part of America's greatest industry will quicken the pulse of business from one end of America to another.

"And if, when the new Plymouth Six is introduced to the public a few weeks from now, it will have contributed its share toward that great objective, I, for one, will be a very happy man."

B. E. Hutchinson, chairman of the board of the Plymouth Moter Corporation, said: "The purpose of this meeting is to introduce the new Plymouth Six to our far-flung dealer organization, through whom it will shortly be presented to the public. There is about to be unfolded to you a dramatic story—a story which has its inception in the vision and the courage of one of the great leaders of American industry—a story whose foundations are laid in years of patient scientific research in one of the great industrial laboratories of the world—a story, the telling of which is the first step toward the initiation of an industrial campaign that will put thousands upon thousands of men to work in all the many ramified industries which contribute to the production of automobiles—the steel worker, the toolmaker, the textile mill hands, men in glass factories, iron foundries, and many others too numerous to mention here. It is a story which means employment to men who for many months have waited for the tide of business to turn—a story which to automobile dealers and their salesmen will mean that they are again in possession of such intrinsic values as can be relied upon to successfully appeal to the latent demand for automobiles at once outstanding in value and within the price limitations of the people during these times.

"We have been fully aware of the public demand for a quality six at a low price . . . and for many years, Chrysler Motors engineers have been working to develop such an engine.

"Our corporation has been built on quality. Every product that we have offered to the public has been a quality product.

"Our engineers would not recommend, nor would we be willing to produce, a six cylinder car that did not live up to our quality standards.

"The Plymouth Six is a totally new automobile. It is the result of that long period of engineering development. Also, fortunately, there are now available for the first time, manufacturing facilities of such greater efficiency as to permit this engine to be manufactured within the price limitations imposed. So now, we are able to offer the public a six, which, in every respect, lives up to the standard set by all our products, and at the same time . . . to make it the lowest priced line ever produced by this corporation."

Following is the table given by Merle Thorpe, editor of Nation's Business, over Plymouth's international radio business conference:

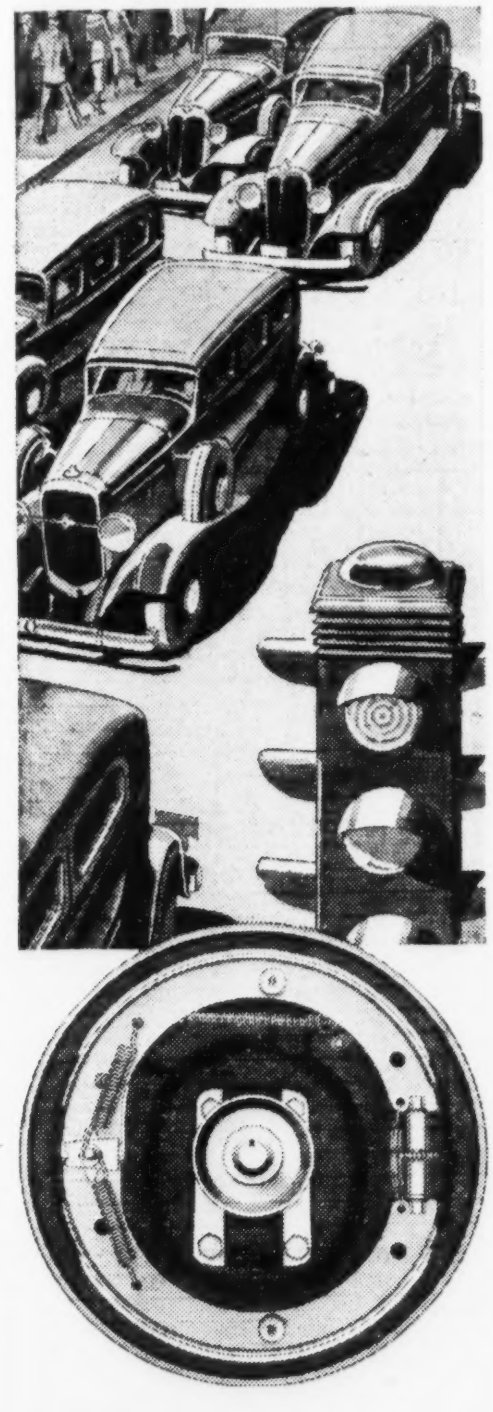
"For three years now we have looked for a sign. In my judgment we have today the most favorable factors for the return of good times.

(Continued on Page 9)

car with...

BENDIX

BRAKES



THE many advantages of Bendix Brakes add up to *complete control* — smooth stopping, quick stopping, sure stopping.

The exclusive "Servo" action multiplies an easy pedal pressure into a powerful stopping force; under all conditions of load and speed. The "Servo" principle uses the momentum of the vehicle as stopping energy; draws that additional power from the rotating wheels.

Bendix Brakes are tightly enclosed against dust, grit, water; mechanically dependable, mechanically rugged — built into the car by the manufacturer.

A large majority of cars on the road today are safer cars, thanks to Bendix Brakes.

BENDIX BRAKE COMPANY, South Bend, Indiana
(Subsidiary of Bendix Aviation Corporation)

PRODUCTS

and AVIATION

BENDIX *Automobile and Aviation* PRODUCTS

Bendix Brakes, Bendix Drive, Bendix Automatic Clutch Control, Bendix Startix, Stromberg Carburetors, B-K Vacuum Power Brakes, Cowdrey Brake Tester, Stromberg Automatic Choke Control, Bendix Seamless Flexible Metallic Tubing, Eclipse Aircraft Starters and Generators, Aircraft Propellers, Bendix-Westinghouse Air Braking Systems, Marine Instruments, Pioneer Instruments, Scintilla Magnetos, Dolce Aircraft Ignition, Weather Instruments, and other equipment.

EMPLOYMENT GAINS IN AUTOMOTIVE PLANTS DURING SEPTEMBER

(Continued from Page 1)

automobile accessory plant that closed for inventory in September was scheduled to recall 5,000 workers at the end of this process. Removal of a Muncie automobile accessory factory to another state caused the release of a number of workers in this city.

Little change occurred in automobile accessory plants in Illinois, while continued restricted operations obtained in the automobile and automobile assembling plants and tire factories of Ohio.

Activities in the automotive industry in New York continued on an even basis with hopes of revival as soon as the coming year's plans are shaped up.

The automobile industry in the Edgewater industrial district of New Jersey continues on a one or two-day a week basis.

FUNDAMENTALS OF ARC WELDING

(Continued from Page 6)

the material and therefore its mechanical properties.

Molten iron in a crucible most generally has a temperature slightly above the melting point, but if the supply of heat is shut off, then through conduction, convection and radiation, gradually sufficient heat is lost until the molecules which moved freely about in the liquid state have become stationary and solidification sets in. At this point a certain amount of residual molecular vibrational energy is given off which temporarily checks a further reduction in temperature. Solidification of course does not take place uniformly throughout the mass of metal. It will start at the outside where heat is dissipated most readily, while the center of the mass remains still liquid. If the metal were chemically pure, solidification would take place at the same temperature (the freezing point), although not at the same time.

However, in case of an alloy where the high melting point metal A is preponderant over the low melting point metal B, it is self-evident that the melting point (or freezing point) of the alloy A-B must be lower than that of the pure metal A. When the molten mass of the alloy A-B in cooling has reached the freezing point of A, then a certain amount of A will begin to solidify. The remaining liquid mass now contains a larger percentage of B which will reduce the point of temperature at which the next batch of A can solidify. This process will continue up to such a point where the residual mixture of A-B will freeze without further separation. In other words, between two metals there is a definte ratio of mixture at which they are most miscible and will have the lowest freezing point that can be obtained. This is called an eutectic mixture. If more than two metals are present in an alloy, the reactions are considerably more complicated.

The welder is often at a loss to determine the exact quality of a piece of metal, and if a successful weld is to be secured this forehand knowledge is necessary. John F. Keller, instructor in forging at Purdue University, Lafayette, Indiana, has worked out a useful method, whch is illustrated in these charts. Touch material lightly on wheel;

(Continued on Page 11)

NEW ENGLAND S. A. E. TO HEAR DR. HASLAM

Cambridge, Mass., Nov. 1.—The New England S. A. E. sectional meeting will be held November 9 at Walker Memorial, Massachusetts Institute of Technology. Following dinner at 6.30 p. m., Dr. Robert T. Haslam, vice-president of the Standard Oil Development Company, will speak on "Hydrogenation."

ILLINOIS A. T. A. SETS DATES FOR CONVENTION

Springfield, Ill., Nov. 1.—The annual state convention of the Illinois Automotive Trade Association will be held in Springfield at the St. Nicholas Hotel, December 12 and 13.

CUMULATIVE NEW CAR REGISTRATION STATISTICS,

Months	AUBURN GROUP			CHRYSLER GROUP					FORD GROUP			GENERAL MOTORS GROUP						
	Auburn	Cord	Totals	Chrysler	De Soto	Dodge	Plymouth	Totals	Ford	Lincoln	Totals	Buick	Cadillac	Chevrolet	La Salle	Oldsmobile	Pontiac	Totals
January	644	70	714	1546	1105	2676	4801	10128	13556	224	13780	6429	574	34516	335	2188	3958	48000
February	916	56	972	3026	2224	3101	4372	12723	9572	295	9867	4856	847	28525	416	2949	4873	42466
March	1085	44	1129	3591	3774	3924	5605	16294	7878	350	8228	6361	1033	29929	454	3031	4947	45755
April	1294	42	1336	3830	3854	3596	14161	25441	6307	345	6652	7408	884	45712	471	3406	7340	65221
May	705	33	738	3124	3251	3136	17325	26836	23556	365	23921	5790	659	43500	394	3118	6508	59969
June	2223	27	2250	2972	3090	2894	16701	25657	53322	300	53622	5042	494	37063	362	1870	5047	49823
July	1864	20	1884	1999	1865	1812	11039	16715	40047	203	40250	2997	314	25185	215	1186	3219	33116
August	1149	19	1168	1794	1836	1607	9490	14727	31023	250	31273	2757	322	23875	256	1604	3034	31848
September	758	6	764	1518	1642	1375	7592	12127	26,432	243	26675	2453	353	21659	274	1702	2910	29351
Line Total	10638	317		23400	22641	23521	91086		211693	2575		44093	5480	289969	3177	21054	41836	
Group Total			10955					169648			214268							405609

FINAL REVISION, COMPLETE NEW PASSENGER

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New York city, are included in the New York state total. Some of this data has been published previously, but is given here complete for the convenience of

In this table, 48 states and the District of Columiba **Returns for today:**

States	AUBURN GROUP			CHRYSLER GROUP					FORD GROUP			GENERAL MOTORS GROUP						
	Auburn	Cord	Totals	Chrysler	De Soto	Dodge	Plymouth	Totals	Ford	Lincoln	Totals	Buick	Cadillac	Chevrolet	La Salle	Oldsmobile	Pontiac	Totals
Alabama	1		1	4	2	2	24	32	319		319	6		265		3	9	283
Arizona					4	1	8	13	97		97	13		45		4	13	75
Arkansas	1		1	2	4	4	22	32	158		158	5	1	149		2	4	161
California	95	1	96	137	163	120	455	875	2426	30	2456	189	39	993	22	94	160	1497
Colorado	7		7	10	4	11	78	103	167		167	27	3	133	1	3	22	189
Connecticut	14		14	36	34	20	168	258	302	3	305	53	11	280	8	24	71	447
Delaware				5	2	2	21	30	73		73	10	1	60	1	6	10	88
Florida	9		9	25	8	9	80	122	410	1	411	17	4	303	2	13	33	372
Georgia	1		1	14	7	19	53	93	468	1	469	36	2	378		14	36	466
Idaho	1		1	2	2	2	6	12	39		39	2	1	44		4	2	53
Illinois	61	1	62	82	115	84	595	876	1291	25	1316	99	25	967	34	103	165	1393
Indiana	29		29	37	74	38	238	387	725	4	729	49	3	554		48	70	724
Iowa	6	1	7	23	12	22	106	163	488	2	490	24	2	470	1	33	53	583
Kansas	13		13	16	16	24	144	200	652	4	656	28	2	550	5	27	66	678
Kentucky	7		7	13	24	26	133	196	371	3	374	12	2	363	2	10	21	410
Louisiana	8		8	1	10	25	39	75	423	1	424	17	2	404	3	15	22	463
Maine	1		1	6	7	9	59	81	140	2	142	22		166	2	15	45	250
Maryland	15	1	16	19	24	13	93	149	423		423	33	3	505	1	23	48	613
Massachusetts	36		36	69	64	56	368	557	920	23	943	146	13	778	13	97	179	1226
Michigan	16		16	47	65	43	285	440	1310	11	1321	67	34	775	16	104	140	1136
Minnesota	7		7	22	21	18	148	209	434	3	437	35	3	483	3	36	43	603
Mississippi	1		1	5	3	3	28	39	259		259	10	1	430		7	6	454
Missouri	11	1	12	27	62	39	287	415	899	8	907	78	6	755	5	67	74	985
Montana				1	1	1	27	30	80		80	8	1	69		5	10	93
Nebraska	4		4	11	3	7	40	61	308	1	309	16	5	235	4	20	41	321
Nevada	3		3	3	3	3	12	21	51	1	52	5		42	2	2	8	59
New Hampshire	2		2	11	7	3	48	69	129	1	130	17		124	2	5	19	167
New Jersey	35		35	76	84	53	334	547	919	6	925	152	23	823	17	82	149	1246
New Mexico				2	1	2	5	10	57		57	4		53			4	61
New York	126	1	127	268	259	200	1158	1885	2534	57	2591	526	80	2224	53	279	360	3522
North Carolina	6		6	26	9	11	66	112	497	2	499	14	2	416	3	14	18	467
N. Dakota				1	4	3	24	32	114		114	6		99		6	1	112
Ohio	55		55	84	126	81	519	810	1314	6	1320	81	22	956	15	99	145	1318
Oklahoma	18		18	14	29	49	126	218	589	3	592	53	6	719	1	27	67	873
Oregon	2		2	7	8	8	25	48	152	4	156	14		92		12	10	128
Pennsylvania	71		71	211	182	137	881	1411	1798	17	1815	242	28	1484	32	189	290	2265
Rhode Island	6		6	11	21	11	64	107	134		134	30	3	90	3	4	48	178
South Carolina	3		3	10	5	6	31	52	314	1	315	5		219	1	3	17	245
South Dakota				7	1	7	25	40	101		101	4		104	2	12	6	128
Tennessee	5		5	13	7	10	56	86	288	2	290	15	2	312		14	17	360
Texas	37		37	71	50	67	205	393	2050	12	2062	128	6	2058	7	46	142	2387
Utah	1		1		8	5	18	31	72		72	5	1	66		5	11	88
Vermont	3		3	4	5	4	31	44	77	1	78	11	2	67		11	14	105
Virginia	4		4	14	35	31	88	168	744	2	746	30	3	508	3	21	64	629
Washington	5		5	16	15	11	66	108	248	1	249	29	1	152		16	30	228
West Virginia	4		4	16	7	29	83	135	271	1	272	10	2	209		9	21	251
Wisconsin	14		14	21	33	30	185	269	432	1	433	41	6	413	8	49	61	578
Wyoming	1		1	3		1	10	14	36		36	4		36		3	5	48
Dist. of Columbia	13		13	15	12	15	27	69	329	3	332	25	2	239	2	17	60	345
Line Total	758	6		1518	1642	1375	7592		26432	243		2453	353	21659	274	1702	2910	
Group Total			764					12127			26675							29351

New Plymouth 6 Announced In Great Radio Hook-Up

(Continued from Page 7)

Every section of the country, every industry, reports a better feeling. Such sentiment must precede any business pick-up. Why? Because to feel better means to have assurance that our personal affairs will turn out all right.

"With that feeling we then plan to do things, to buy things, to resume our normal ways of living. Here and there a man dares to venture, and it make the day's business news a little brighter. Activity begets activity. Little by little, fear is dispelled, more men step out, the movement becomes infectious and soon we all move forward to better times.

"The world owes a lot to those leaders who dare, who have the courage of their imagination. You dealers and salesmen have such a leader. Walter Chrysler has resourcefulness and enterprise. He has contempt for such an alibi as 'saturation point.' He knows that over-production is really underconsumption. He doesn't doubt the return of better days. He appreciates the ceaseless renewal of the domestic market. He knows that the tremendous urge of American citizens for greater comfort and convenience doesn't lie dormant for long, but is ready to be awakened by energetic, intelligent salesmanship. Salesmanship, given something to sell, given inspiration and a fine fighting spirit at the top, is the only thing that will throw into mesh once more the two great wheels of production and consumption.

"We may as well admit that our American salesmanship, which has been the envy and dispair of the entire world, foundered when the first rough weather hit us three years ago. The industry or the corporation which first regains its selling courage will get the jump on all the rest of us, and this is true of the individual. There never has been a grander opportunity for individual effort than now to get its individual reward, because it has always been true that in times like these new faces emerge, new names make the headlines of tomorrow, new fortunes are born.

"This recognition, this distinction will come to the man among you who most happily combines common sense with resourcefulness, energy and courage who will be quick to translate this better feeling now so prevalent into business activity, which, by the laws of trade, will increase itself ten and a hundred fold.

"The world stands ready today—1932—as always since the beginning, to reward the man who can do this, and, handsomely."

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

FIRST NINE MONTHS OF 1932 BY MAKES AND MONTHS

Months	HUDSON GROUP			STUDEBAKER GROUP				WILLYS-OV'R'D GR'P			NON-AFFILIATED MANUFACTURERS									Totals
	Essex	Hudson	Totals	Pierce-Arrow	Rockne	Studebaker	Totals	Willys-Overland	Willys-Knight	Totals	De Vaux	Franklin	Graham	Hupmobile	Marmon	Nash	Packard	Reo	Miscellaneous	
January	1989	823	2812	258	342	3060	3660	1811	355	2166	227	220	1141	727	275	1721	1065	337	517	87,490
February	2710	1175	3885	291	491	3134	3916	2447	418	2865	191	175	1342	1066	218	1711	629	325	448	82,799
March	2715	1203	3918	286	960	2231	4477	2611	437	3048	135	191	1656	2494	191	2642	1250	332	435	92,175
April	3181	1338	4519	365	1962	3248	5575	2544	414	2958	122	190	1357	1665	123	3562	1565	421	382	121 089
May	2591	1135	3726	299	2441	2658	5398	2553	380	2933	143	149	1297	1083	106	2814	1285	490	370	131,263
June	2190	898	3088	212	2392	2313	4917	2197	458	2655	127	141	1123	875	93	2395	1186	464	262	148,738
July	1499	553	2052	139	1787	1502	3428	1887	300	2187	106	107	1022	532	79	1415	652	327	236	104,188
August	3784	435	4219	187	1805	1640	3632	1615	195	1810	77	172	1172	580	113	1191	827	331	317	93,457
September	3224	326	3550	189	1701	1387	3277	1671	167	1838	59	131	1125	451	61	934	843	295	412	81893
Line Total	23883	7886		2226	13881	22173		19336	3124		1187	1476	11235	9523	1259	18385	9302	3322	3409	943092
Group Total			31769				38280			22460										

CAR REGISTRATION STATISTICS, SEPT., 1932

New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Metropolitan district figures, compiled by Sherlock & Arnold, our subscribers. Readers desiring county, city, or town lists, or lists of owners in any given section may obtain these by addressing any of these three companies.

Colorado, Mississippi, Wyoming

Comparative figures for September, 1931, will be found on Pages 10 and 11

States	HUDSON GROUP			STUDEBAKER GROUP				WILLYS-OV'D GROUP			NON-AFFILIATED MANUFACTURERS									State Total
	Essex	Hudson	Totals	Pierce-Arrow	Rockne	Studebaker	Totals	Willys-Overland	Willys-Knight	Totals	De Vaux	Franklin	Graham	Hupmobile	Marmon	Nash	Packard	Reo	Miscellaneous	
Alabama	4	1	5		7	10	17	12	1	13							1	2	12	685
Arizona	9	1	10		4	4	8	4		4	1					2	3			213
Arkansas	1		1		5	2	7	4		4			1			4	1		1	371
California	224	37	261	28	257	148	433	45	24	69	5	1	133	45	1	69	51	18	6	6,021
Colorado	30	3	33	2	13	7	22	6		6			2	5		10	5	2		551
Connecticut	70	5	75	4	36	23	63	12	1	13		2	21	9	3	21	22	17	1	1,271
Delaware	5		5		4	4	8	2		2						3	3		1	213
Florida	39	6	45		5	2	7	7	1	8	1	1	13	3	2	7	4	2	128	1,135
Georgia	28		28	2	19	16	37	15		15		2	10	5		3	4	2	48	1,183
Idaho	3		3		1		1						2			3			1	115
Illinois	142	15	157	14	56	91	161	93	11	104	2	11	54	18	2	67	75	18	9	4,325
Indiana	113	13	126	1	62	36	99	65		65		3	37	7	3	7	8	6	1	2,231
Iowa	67	8	75		23	9	32	44	1	45	2		9	1		13	10	3	5	1,438
Kansas	95	17	112	1	33	14	48	39	1	40	2	2	7	6		12	4	1	5	1,700
Kentucky	37	5	42		26	8	34	27	4	31	3	1	6	4	2	8	9	4	5	1,136
Louisiana	12	1	13		30	6	36	11	1	12	1		3	4	1	22	4		33	1,099
Maine	53	6	59		14	14	28	6		6	2		6	4		16	6	5		606
Maryland	39	1	40	5	39	21	65	20	2	22		1	22	5		7	12	3	3	1,381
Massachusetts	245	14	259	9	101	57	167	45	11	56		9	45	37	1	93	68	18	12	3,527
Michigan	211	14	225	10	69	35	114	50	5	55	8	1	58	22	3	18	44	14	3	3,478
Minnesota	34	7	41		39	26	65	33	3	36		1	18	6		10	19	4	1	1,457
Mississippi	4		4		11	7	18	2		2	1		3	3		4	2		5	795
Missouri	69	8	77	9	33	40	82	44	2	46	2		50	13		23	11	15	4	2,642
Montana	6	1	7	1	5	2	8	6		6		3	2	1		6				236
Nebraska	16		16		23	11	34	16	1	17	1		5	1		6		2		777
Nevada					3	5	8				1		2				2			143
New Hampshire	27	1	28		17	4	21	8	1	9		1	9	1		9	3	4		453
New Jersey	139	16	155	16	81	70	167	80	20	100	3	10	55	22	9	46	51	15	7	3393
New Mexico					1		1		1	1			2							132
New York	361	59	420	52	170	381	603	248	42	290	5	43	154	106	26	168	200	70	20	10,230
North Carolina	52	4	56		6	10	16	8		8	1	1	6			3	4		21	1,200
N. Dakota	3		3		11	6	17	4		4	1		1				1			285
Ohio	220	14	234	7	88	64	159	241	12	253	3	7	95	20	1	41	36	21	2	4,375
Oklahoma	24	1	25	1	17	11	29	17		17	2	1	5	5		6	12	1		1,804
Oregon	10	1	11		4	4	8	2		2		1	4	1		6	2			369
Pennsylvania	377	32	409	11	133	82	226	226	17	243	5	17	136	49	5	88	78	23	25	6,866
Rhode Island	31	6	37	2	17	11	30	17		17		1	10	6	1	11	3	2	2	545
South Carolina	20	3	23		5	1	6	3		3				5				2	8	662
South Dakota	9		9		13	2	15	4		4				2		3				302
Tennessee	36	1	37		9	2	11	13	2	15	1	3	6	5		5	7		12	843
Texas	65	8	73	6	91	45	142	41	1	42		5	31	12	1	22	13	10	23	5,253
Utah	17	1	18		3	2	5	1		1	1		10	1		1	6	1		236
Vermont	24	2	26		6	4	10	9		9		2	5	2		2	7		1	294
Virginia	73	2	75	1	20	9	30	28		28	1		22	4		8	9		2	1,726
Washington	20	3	23		31	16	47	23	1	24			11	2		17	8	1	1	724
West Virginia	30	1	31		14	6	20	31		31	1		11			8	4	4	1	773
Wisconsin	88	5	93	2	31	34	67	48	1	49	2		20	6		41	16	5	3	1,596
Wyoming	2		8	1	2	3	6	1		1			1			2	2			119
Dist. of Columbia	34	3	37	4	13	22	39	10		10	1	1	17	3		13	13			893
Line Total	3224	326		189	1701	1387		1671	167		59	131	1125	451	61	934	843	295	412	81,893
Group Total			3550				3277			1838										

NEW U. S. EQUIPMENT AT JOINT TRADE SHOW

The United States Air Compressor Company of Cleveland, O., will have on display at the Joint Trade Show in Detroit some new units for super-service stations.

U. S. Lubricating Cruiser is mounted on four ball bearing casters, carrying a complete set-up of U. S. specialized lubricating guns, mounted on the drum, while on the inside of the drum is a compartment of tools, fittings, bars and rags. It is a traveling lubricating station in itself. The guns of this unit have chromium plated barrels, flared ends, while the rest of the gun is cadmium plated, making it not only practical and easy to hold, but very attractive in appearance. Handles are designed for convenient grip and non-pinching of fingers.

The new U. S. air compressor model FA-983 is designed for stations where the air requirements are unusually heavy and the going hard. Four cylinder, two-stage, air-cooled, five horse power motor and triple V-type belt. Pressure range of 145 to 175 pounds. Small bore of cylinder provides much cooler operation, carbon elimination and greater efficiency. To eliminate any danger of burning motor and belt, there is a dirt proof, automatic unloader, which is an integral part of the pump.

The new U. S. models A-15 full hydraulic drive-on lifts, A-2 full hydraulic free wheel lifts and electric lifts are the talk of the trade whenever the subject of lifts is discussed. On models A-15 and A-2 are three safety features—oil lock, dead man's control and retarding valves. U. S. jack piston is one of the heaviest made and has self-adjusting packing and replaceable bearings. Superstructure is constructed of cold rolled steel. Automatic chocks on all four ends, runways 15 feet long and 16 inches wide, providing a running base more than ample to accommodate the longest wheel base car and wide enough for the new wide tread cars.

NEW REO DISTRIBUTOR FOR SPRINGFIELD, MASS.

Springfield, Mass., Nov. 1.—Announcement has just been made that Reo Motors Sales, Inc., a newly organized local corporation, has been appointed Reo distributor for the Springfield territory. The new concern is headed by H. E. Hedges, president, and Walter J. Sattler, treasurer. Reo Motor Sales, Inc., will be located at 24 Park St., the same location which was formerly occupied by Reo for several years.

Mr. Hedges has been with Reo for ten years and was general manager for Russell P. Taber, Inc., formerly the Reo distributor in Springfield.

Mr. Sattler is one of the best Reo service managers in New England. Fourteen years ago he started with Reo in Meriden, Conn., later being transferred to Hartford as service manager. Mr. Sattler came to Springfield in 1925 as service manager with Mr. Hedges and served in that capacity until 1931. At that time he took over the Reo service and has operated his own station in the same location.

CUMULATIVE NEW CAR REGISTRATION STATISTICS,

Months	AUBURN GROUP			CHRYSLER GROUP					FORD GROUP			GENERAL MOTORS GROUP						
	Auburn	Cord	Totals	Chrysler	De Soto	Dodge	Plymouth	Totals	Ford	Lincoln	Totals	Buick	Cadillac	Chevrolet	La Salle	Oldsmobile	Pontiac	Totals
January	1041	75	1116	2402	1237	3815	2376	9880	36958	216	37174	6716	917	41073	472	2458	5092	56728
February	1678	150	1826	2243	1443	4314	2104	10104	39668	250	39918	6388	755	41564	418	3940	6101	59166
March	3335	201	3536	5300	2660	6195	3008	17163	60625	363	60988	9408	1117	61062	720	6129	9554	87990
April	4724	215	4939	7745	3649	7773	4395	23562	81457	490	81947	12588	1614	80743	968	7528	12981	116422
May	4924	175	5099	7870	3431	7073	3985	22359	74066	443	74509	10835	1294	78668	920	6382	12594	110693
June	3794	130	3924	6593	3364	5593	3896	19446	58027	393	58420	8686	1136	65798	703	4944	9602	90869
July	3344	103	3447	5892	3350	5340	14599	29181	50349	349	50698	7965	995	58581	657	4748	8736	81682
August	2339	77	2416	4521	2714	4203	19134	30572	38835	267	39102	6491	705	44058	458	3648	6298	61658
September	1694	72	1766	3731	2063	3035	16881	25710	30849	219	31068	5265	665	33324	429	2521	5204	47408
Line Total	26871	1198		46297	23961	47341	70378		470834	2990		74342	9198	504871	5745	42298	76162	
Group Total			28069					187977			473824							712616

*Not In Production.

FINAL REVISION, COMPLETE NEW PASSENGER

This table is repeated for comparative purposes only.

States	AUBURN GROUP			CHRYSLER GROUP					FORD GROUP			GENERAL MOTORS GROUP						
	Auburn	Cord	Totals	Chrysler	De Soto	Dodge	Plymouth	Totals	Ford	Lincoln	Totals	Buick	Cadillac	Chevrolet	La Salle	Oldsmobile	Pontiac	Totals
Alabama, 1931	1	1	2	6	5	1	16	28	281		281	17		389	1	1	9	417
Arizona, 1931	4		4	9	8	10	45	72	130		130	20		119		5	8	152
Arkansas, 1931				8	1	22	56	87	185		185	7	3	169		5	7	191
California, 1931	200	1	201	285	227	241	1322	2075	3164	29	3193	464	80	2080	37	130	245	3036
Colorado, 1931	21		21	25	10	26	119	180	304		304	59	4	285	1	16	61	426
Connecticut, 1931	39	2	41	71	57	53	275	456	447	3	450	134	16	549	11	52	144	906
Delaware, '31	2		2	15	4	3	28	50	119		119	21	1	74	4	9	18	127
Florida, 1931	22	1	23	30	7	19	202	258	392	3	395	41	3	502	2	15	62	625
Georgia, 1931	16	1	17	21	13	40	132	206	602	3	605	55	4	577	4	18	42	700
Idaho, 1931	4	1	5	4	5	11	44	64	108		108	12		100		2	5	119
Illinois, 1931	120	13	133	247	165	209	1138	1759	1893	13	1906	269	39	1741	29	207	324	2609
Indiana, 1931	68	6	74	117	134	125	650	1026	873	7	880	146	16	1061	6	106	197	1532
Iowa, 1931	20	1	21	63	22	85	264	434	708	2	710	56	2	842		47	126	1073
Kansas, 1931	12	3	15	16	15	34	130	195	364		364	38	2	520	2	25	74	661
Kentucky, 1931	16		16	78	19	62	287	446	494		494	35	3	696	2	10	74	820
Louisiana, 1931	8		8	27	20	26	106	179	365	1	366	18	3	479	1	13	42	556
Maine, 1931	14		14	16	9	20	120	165	226	1	227	60	2	224	1	18	70	375
Maryland, 1931	14		14	46	20	23	232	321	470	1	471	85	3	735	1	28	110	962
Mass., 1931	74	5	79	146	57	119	665	987	1400	11	1411	317	44	1244	37	132	302	2076
Michigan, '31	42	5	47	161	99	228	1175	1663	1679	11	1690	234	45	1409	28	182	244	2142
Minnesota, 1931	20	1	21	62	22	34	391	509	430		430	80	7	678	4	45	81	895
Mississippi, 1931	3		3	9	2	5	43	95	250	1	251	18		261		2	17	298
Missouri, 1931	47	4	51	86	60	92	474	712	1031	9	1040	104	11	1218	9	54	142	1538
Montana, 1931	2		2	14	5	5	43	67	82		82	9		80	1	4	29	123
Nebraska, 1931	10		10	19	11	28	156	214	362		362	40		474	1	18	54	587
Nevada, 1931	7		7	9	3	2	18	32	56	2	58	9		45		4	7	65
N. Hampshire, '31	9		9	17	7	13	116	153	184	1	185	34	3	207	2	31	41	318
New Jersey, 1931	111	4	115	265	54	125	737	1181	1225	13	1238	401	53	1445	40	175	268	2382
New Mexico, 1931				3	2	4	28	37	60		60	5	2	73			8	88
New York, 1931	290	10	300	591	234	353	2054	3232	2705	51	2756	933	156	3436	81	442	608	5656
N. Carolina, 1931	14		14	59	21	57	253	390	703	4	707	47	4	696	6	23	74	850
N. Dakota, '31	1		1	10	3	6	53	72	160	1	161	18		122		8	13	161
Ohio, 1931	112	6	118	222	141	143	1343	1849	1472	8	1480	195	38	1623	26	132	292	2306
Oklahoma, 1931	12	1	13	19	6	41	108	174	359	1	360	41	3	476	3	17	44	584
Oregon, 1931	7		7	29	24	14	81	148	247	1	248	73	1	222	2	18	30	306
Pennsylvania, '31	157	2	159	442	200	324	1787	2753	2074	21	2095	490	62	2487	53	228	490	3810
Rhode Island, '31	16		16	48	45	25	131	249	208	2	210	49	9	225	3	14	64	364
So. Carolina, 1931	5		5	15	10	12	71	108	358		358	14		341		7	22	384
So. Dakokta, 1931				17	17	25	62	121	140		140	17		159	1	23	19	219
Tennessee, 1931	15	1	16	30	6	25	184	245	346		346	36	1	473	1	12	26	549
Texas, 1931	23	1	24	86	67	81	366	600	1179	3	1182	194	15	1670	8	57	138	2032
Utah, 1931	6		6	8	6	10	22	46	141		141	25	1	148	1	7	15	197
Vermont, 1931	7		7	10	5	10	52	77	107		107	24	1	95	4	7	27	158
Virginia, 1931	38		38	64	68	46	273	451	814	1	815	59	6	865	3	24	126	1083
Washington, 1931	15		15	37	50	30	210	327	332	2	334	70	8	281	3	38	62	462
W. Virginia, 1931	15	1	16	55	18	33	177	283	284	2	286	35		317	3	19	67	441
Wisconsin, '31	30	1	31	82	51	78	433	644	656	5	661	124	5	890	4	73	173	1269
Wyoming, 1931	5		5	7	1	9	20	37	63	2	65	11	2	80		5	7	105
Dist. of Col., 1931	20		20	25	27	48	189	289	617	4	621	62	7	442	3	33	96	643
Line Tot'l, '31	1694	72		3731	2063	3035	16881		30849	219		5265	665	33324	429	2521	5204	
Group Tot'l, '31			1766					25710			31068							47408

*Not in production.

FUNDAMENTALS OF ARC WELDING

(Continued from Page 8)

observe individual spark. Use black back ground.

A piece of wrought iron free from carbon, if held against the emery wheel, the end of the bar will be heated by friction; as the small particles are thrown from the wheel they will follow a straight line, which becomes broader and more luminous some distance from the source of heat, and then disappear as they started. This is probably due to the action of oxygen of the air on heated particles requiring some time to act.

Mild steel which contains a small percentage of carbon. The effect is at once noticeable by a division or forking of the luminous streak; this is owing to the presence of carbon which is acted upon by a maximum heat of the iron spark, which then burns explosively, causing a break in the original heavy lines.

The lower grades of tool steel which contains from 50 to 100 point carbon. The iron lines become less and less conspicuous, the forking of the luminous streak occurring very much more frequent, often subdividing; the lower the carbon the less sparks and further from the source of heat.

In the higher grades of carbon steels the iron lines are practically eliminated, with an increase of the starlike explosions, which often divide and subdivide, causing a beautiful display of figures. This is probably due to the iron and carbon becoming so united that they are most easily attacked by the oxygen. Hence the great danger of burning steel in the fire. It would be well to state that the higher the percentage of carbon the more profuse the explosions and the shorter the distance from their source of heat.

Chromium and tungsten high speed steels are very easily determined by the spark test. The particles seem to follow a broken line with a very slight explosion; just before they disappear the color is of chrome yellow and show no trace of a carbon spark.

Manganese in tool steel above a certain per cent. is a very injurious element. The characteristic of the manganese spark is that it widely differs from the carbon spark in that it seems to shoot or explode at right angles from its line of force. Each dart is subdivided into a number of white globules. With a little practice the trained eye will soon detect the slightest trace of manganese in the iron or steel.

Mushett steel, the grade of air hardening or high speed steel. It is very easy to distinguish from other steels as the particles follow a broken line and are a very, very dark red, with an occasional manganese spark.

Represents the spark as thrown from a special steel manufactured and to be used especially for magnets. It clearly demonstrates the advantage of this method of selecting steels by comparison.

FIRST NINE MONTHS OF 1931 BY MAKES AND MONTHS

Months	HUDSON GROUP			STUDEBAKER GROUP				WILLY-OV'D GROUP			NON-AFFILIATED MANUFACTURERS									Totals
	Essex	Hudson	Totals	Pierce-Arrow	Rockne	Studebaker	Totals	Willys-Overland	Willys-Knight	Totals	De Vaux	Franklin	Graham	Hupmobile	Marmon	Nash	Packard	Reo	Miscellaneous	
January	3366	1865	5231	396	*	3270	3666	2555	773	3328	*	316	1097	1069	827	2622	1230	678	1824	126,786
February	3264	1674	4938	397	*	3121	3518	4778	863	5641	*	331	1263	1282	662	2347	1125	590	1422	134,133
March	5064	2331	7395	517	*	4802	5319	4526	1120	5646	*	419	1825	2020	601	3935	1406	749	1849	200,841
April	7070	2907	9977	624	*	6074	6698	5580	1122	6702	93	470	2169	2562	618	5259	1778	891	1645	265,732
May	6047	2416	8463	573	*	5420	5993	5339	778	6117	804	372	2234	2372	575	4622	1483	606	1426	247,727
June	4787	1890	6677	452	*	4741	5193	4399	582	4981	909	300	2154	1827	441	3786	1335	539	1110	201,911
July	3840	1825	5665	355	*	4513	4868	3949	617	4566	927	276	2039	1655	443	5173	1880	532	1259	194,291
August	2755	1252	4007	265	*	3413	3678	2794	700	3494	665	265	1467	1258	299	3855	1561	452	958	155,707
September	2072	1064	3136	219	*	3000	3219	2145	615	2760	518	230	1887	1040	391	2872	1609	447	814	124,875
Line Total	38265	17224		3798	*	38354		36031	7204		3916	2979	16135	15085	4857	34471	13407	5484	12307	1,652,003
Group Total			55489				42152			43235										

CAR REGISTRATION STATISTICS, SEPTEMBER, 1931

Figures for September, 1932, will be found on Pages 8 and 9

States	HUDSON GROUP			STUDEBAKER GROUP				WILLY-OV'D GROUP			NON-AFFILIATED MANUFACTURERS									State Total
	Essex	Hudson	Totals	Pierce-Arrow	Rockne	Studebaker	Totals	Willys-Overland	Willys-Knight	Totals	De Vaux	Franklin	Graham	Hupmobile	Marmon	Nash	Packard	Reo	Miscellaneous	
Alabama, 1931	3		3			17	17	16	1	17			2	2		7	5			781
Arizona, 1931	2		2			16	16	4	1	5	6	2		1		16	2			408
Arkansas, 1931	3	2	5	1		2	3	3		3			10			4	2			490
California, 1931	77	64	141	28		379	407	116	47	163	105	14	166	81	8	207	122	30	99	10,048
Colorado, 1931	13	17	30	2		32	34	27	6	33	4		16	3	5	22	9	1	13	1,101
Connecticut, 1931	50	22	72	6		67	73	25	6	31	11	8	50	22	6	61	39	18	8	2,252
Delaware, '31	3	4	7			8	8	9	3	12			1	1		6	7		4	344
Florida, 1931	20	16	36	1		14	15	13	4	17	5	2	33	4	1	24	9	4	4	1,455
Georgia, 1931	16	14	30	2		43	45	13	2	15	7	2	22	14	1	40	8	3	3	1,718
Idaho, 1931	4	3	7			5	5	9	2	11	7		8	2		12		1	3	352
Illinois, 1931	124	64	188	13		181	194	126	29	155	27	9	159	60	15	205	110	27	41	7,597
Indiana, 1931	79	35	114	3		119	122	95	12	107	12	4	52	28	26	58	25	7	14	4,081
Iowa, 1931	34	22	56	3		52	55	72	12	84	13	2	20	15	4	40	13	10	24	2,574
Kansas, 1931	27	15	42	2		19	21	33	4	37	2		10	4	2	27	2	10	11	1,403
Kentucky, 1931	38	16	54	2		36	38	53	6	59	9	1	5	28	9	23	12	6	13	2,033
Louisiana, 1931	15	7	22	1		23	24	11	3	14	5		1	11	1	47	6	3		1,243
Maine, 1931	40	21	61			30	30	24	1	25	6	3	20	4	2	38	13	5	4	992
Maryland, 1931	36	20	56	1		45	46	23	3	26		4	32	14	1	46	20	11	13	2,037
Mass., 1931	172	69	241	27		182	209	61	42	103	18	28	68	57	26	176	113	26	43	5,661
Michigan, '31	164	68	232	3		75	78	71	13	84	50	2	105	58	7	78	78	41	38	6,393
Minnesota, 1931	16	11	27	1		38	39	41	12	53	2		44	21		25	22	3	14	2,105
Mississippi, 1931	3		3	1		15	16	7	1	8			5	3		13	2			661
Missouri, 1931	54	23	77	5		41	46	65	18	83	2	2	45	31	22	77	36	12	42	3,816
Montana, 1931	5		5			5	5	6	1	7	1	4	2	4		6	2	2	5	317
Nebraska, 1931	8	3	11			32	32	37	9	46	4		26	5	3	13	5	3	1	1,322
Nevada, 1931	1	4	5			9	9	4	1	5	2		3	1		6	2	1		196
N. Hampshire, '31	13	9	22	3		21	24	17	7	24	5	4	11	6	2	23	13	4	4	807
New Jersey, 1931	105	62	167	31		185	216	92	53	145	21	12	92	83	89	222	170	25	78	6,236
New Mexico, 1931	1	1	2			1	1	2		2				1		3			3	197
New York, 1931	302	156	458	30		477	507	292	153	445	53	78	252	146	36	532	339	72	110	14,972
N. Carolina, 1931	22	18	40	2		23	25	21	1	22	5	1	10	4	1	6	12		6	2,093
N. Dakota, '31	5	3	8			8	8	16		16	5		3	1	2	3	1		6	448
Ohio, 1931	124	56	180	6		151	157	154	42	196	27	11	123	66	25	134	85	13	56	6,826
Oklahoma, 1931	5	4	9	1		14	15	8	1	9	2		1	5		5	4	2	2	1,185
Oregon, 1931	4	6	10			23	23	11	3	14	4		20	3		24	2	8	8	825
Pennsylvania, '31	210	81	291	13		195	208	252	62	314	30	27	185	119	67	278	170	32	56	10,594
Rhode Island, '31	13	9	22	7		27	34	6	5	11	2	4	25	11	1	23	11	8	5	996
So. Carolina, 1931	15	3	18			8	8	1		1	2		2	1		1	4	1		893
So. Dakokta, 1931		2	2			12	12	10	3	13	3			4		4	2		5	525
Tennessee, 1931	7	4	11	3		33	36	21		21	11	1	24	9	2	11	9	1	3	1,295
Texas, 1931	30	24	54	7		82	89	46	5	51	2	2	47	25	7	59	31	23	15	4,273
Utah, 1931	9	14	23			16	16	8	2	10	3		14	6	2	15	4	1	3	487
Vermont, 1931	14	11	25			10	10	14	2	16	3		6	3		11	4	3	3	433
Virginia, 1931	43	25	68	6		34	40	47	12	59	3		17	21	5	32	20	3	7	2,662
Washington, 1931	10	10	20	2		66	68	26	6	32	11	2	17	7		40	5	6	19	1,365
W. Virginia, 1931	27	9	36			23	23	44	2	46	6		26	4	3	24	13	5	3	1,215
Wisconsin, '31	69	29	98	3		72	75	78	13	91	20		52	26	5	110	22	13	13	3,130
Wyoming, 1931	2	3	5	1		4	5	2		2	2		2	1		4		2	1	236
Dist. of Col., 1931	35	5	40	2		30	32	13	4	17		1	53	14	5	31	24	1	11	1,802
Line Tot'l, '31	2072	1064		219	*	3000		2145	615		518	230	1887	1040	391	2872	1609	447	814	124,875
Group Tot'l, '31			3136				3219			2760										

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Automotive Daily News

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